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**Materials Screened
As Animal Systemic Insecticides
At Kerrville, Texas, 1960-1967**

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Production Research Report No. 116

PROCUREMENT SECTION
CURRENT SERIAL RECORDS

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**Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE**

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T. M. Whetstone and S. E. Ernst of this Division aided in conducting the tests. Mrs. Evelyn M. G. Osborne, also of this Division, verified the nomenclature of the materials presented in table 1.

Materials Screened As Animal Systemic Insecticides At Kerrville, Texas, 1960-1967

By R. O. DRUMMOND
Entomology Research Division

Since 1953, more than a thousand candidate materials have been evaluated in screening tests to determine their activity as animal systemic insecticides at the Kerrville, Tex. laboratory, Entomology Research Division, Agricultural Research Service, U.S. Department of Agriculture. Results of tests with 438 compounds screened during 1953-59 were presented by Drummond (2).¹ The results of screening tests with systemically active insecticides and additional tests with these insecticides administered to cattle for the control of cattle grubs, *Hypoderma* spp., have been presented in a series of reports

(3, 4, 5, 6, 7, 8, 9). The work reported in this publication is a continuation of the research reported for 1953-59 (2). It contains results of tests with materials screened from 1960 to 1967. It also contains results of tests with a few materials screened before 1960, but whose chemical designations were not available at the time of the publication of the previous report (2). For some other materials screened during 1960 to 1967, the chemical designations were not available in time for this report, and thus these materials could not be included.

EXPERIMENTAL PROCEDURES

With one exception, the procedures used in the screening test have not been changed since they were standardized in 1956. These procedures, described briefly by Drummond (1, 2) and in detail by Graham (10), are presented as follows.

The midsections of guinea pigs, from the front to the hind legs, were closely clipped with small animal clippers, and a plastic capsule ($\frac{3}{4}$ inches high by 1-inch diameter) was attached to the side of the chest area with Branding Cement® and adhesive tape. After 3 to 5 hours, to allow the cement to dry partially, a minimum of 10 starved nymphal lone star ticks, *Amblyomma americanum* (L.), were placed in the capsule and the lid of the capsule was screwed onto the base.

About 24 hours after the capsules were placed on the guinea pigs, a small wound was made in the hip of each guinea pig and infested with about 10 to 25 newly hatched screwworm larvae, *Cochliomyia hominivorax* (Coquerel). The use of screwworm larvae was discontinued in the fall of 1962 when the colony at Kerrville was destroyed because of the program to eradicate screwworms in the South-

western United States. Screwworm larvae were replaced by larvae of both the secondary screwworm, *Cochliomyia macellaria* (F.), and the black blow fly, *Phormia regina* (Meigen). Larvae of these two species do not usually invade living tissue, and they do not remain in an artificial wound. Therefore, it was necessary to alter the infestation procedures so that the larvae were confined in wounds and thus remained in contact with wound fluids and living flesh as do screwworm larvae. In the procedures used since 1962, two wounds were made on the back of each guinea pig; one wound in front of the girdle of adhesive tape that held the plastic capsule for ticks, and the other behind this girdle. Wounds were made by cutting away a dime-sized piece of skin and slightly scarifying the underlying tissues. About 50 to 100 newly hatched larvae were placed in each wound; *C. macellaria* in the forward wound and *P. regina* in the rear one. Immediately after larvae were placed in a wound, the wound was covered with a bandage (a piece of cotton attached to adhesive tape) so that larvae would be confined to the area of the wound. Larvae of the two blow-flies were somewhat less susceptible to systemic insecticides than were screwworm larvae (6), but could be used in the screening tests.

¹Italic numbers in parentheses refer to Literature Cited, page 41.

At the time that the guinea pigs were infested with fly larvae, the capsules were inspected for ticks, and any unattached ticks were removed. This was necessary so that ticks would be actively engorging during the period of treatment of the guinea pig.

One day after the guinea pigs were infested with fly larvae, they were treated orally or subcutaneously with the candidate chemicals. For dosages of 25 to 100 milligrams per kilogram, the usual initial dosage, the chemicals were formulated as 5 percent solutions in Tween-20 (polyoxyethylene sorbitan monolaurate); for administration at dosages of 10 milligrams per kilogram or lower, the chemicals were formulated as 1 percent solutions in Tween-20. Often the initial dosage was less than 100 milligrams per kilogram because of information on the toxicity of the chemical furnished by the supplier of the candidate chemical. At any dosage, one guinea pig was treated orally and another subcutaneously. For the oral treatment, one end of a 1-inch piece of urinary catheter was placed over the tip of a syringe and the other end was inserted into the esophagus of the guinea pig, and the treatment was administered into the esophageal tract of the guinea pig. For the subcutaneous treatment, a 20-gage needle was placed on the tip of the syringe and inserted under the skin on the dorsal neck region of the guinea pig. The treatment was injected subcutaneously in two or three areas of the neck and the area massaged lightly to lessen the chances of the liquid leaking out of the injection hole.

At about 4 hours posttreatment, about 30 starved stable flies, *Stomoxys calcitrans* (L.), which had been placed in small (3 inches long X 1-inch diameter) cylindrical, screen wire cages, were allowed to feed on the shaved belly of each guinea pig. After about 10 minutes, flies were anesthetized with carbon dioxide; those flies that fed were separated from unfed flies, counted, and held for 24 hours, when mortality was recorded. Stable flies were also allowed to feed on the guinea pigs at 24 hours posttreatment.

At 24 hours posttreatment, the wounds were examined for live larvae, and such larvae were killed with a few drops of benzol. This was done to prevent the guinea pigs from being killed by these myiasis-producing larvae.

At 3 to 5 days posttreatment, the nymphal ticks finished engorging and detached from the treated guinea pigs. The number that engorged was compared with the number that had been counted attached immediately before treatment to determine effects of the treatment on the engorging of the ticks. Engorged ticks were held at 80 percent relative humidity and 27° C. for at least a month. The number of adult ticks that emerged from the engorged nymphs was compared with the number of engorged nymphs to determine the effects of the treatments on the molting of the ticks.

If any of the arthropods or the guinea pigs were killed at the initial dosages, successively lower dosages were administered to guinea pigs until the guinea pigs survived and there was no systemic activity against the arthropod.

RESULTS

The results of tests with 640 candidate chemicals are presented in table 1. In this table the materials are listed according to current Chemical Abstracts nomenclature. In the index the materials are listed according to Entomology number (ENT-), and common name or company number is also presented.

Of the 640 candidate materials tested, 173 or 27 percent were systemically active against one or more of the arthropods. The spectrum of activity of these 173 systemically active insecticides is presented as follows:

Active Against—	No. of Insecticides
Fly larvae.....	46
Fly larvae and stable fly adults.....	38
Fly larvae and ticks.....	17
Fly larvae, stable fly adults, and ticks.....	29
Stable fly adults.....	24
Stable fly adults and ticks.....	8
Ticks.....	11

Of the 173 systemic insecticides, 130 (75 percent) were active against fly larvae, 99 (57 percent) were active against stable fly adults and 65 (37 percent) were active against ticks. A total of 37 (22 percent) were systemically active only when administered orally, 30 (17 percent) only when administered subcutaneously, but 106 (61 percent) were active when administered either orally or subcutaneously to guinea pigs. Eighty-two insecticides (47 percent) were systemically active at dosages that were lethal to the guinea pigs, but 91 (53 percent) were systemically active at dosages that were not lethal to the guinea pigs.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
1	25067	Acetaldehyde, butyl 1, 1-dimethyl-2-propynyl acetal	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	
2	27403-X	Acetamide, 2-fluoro- <i>N</i> -methyl- <i>N</i> -1-naphthyl-, 25-percent emulsion concentrate	10 O. 10 Sc.	0.5 ^a 0.5 ^a	----- -----	I I	I I	I I	
3	1348	Acetamide, <i>N</i> -1-naphthylthio-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	
4	23540	Acetanilide, 2, 4'-dichloro-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	
5	25651	Acetanilide, 4'-(3, 3-dimethyl-1-triazeno)	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	
6	25956	Acetic acid, [(2-hydroxyethyl)thio]-, isobornyl ester, <i>O</i> -ester with <i>O, O</i> -diethyl phosphorothioate	100 O. 100 Sc.	10 25	----- -----	I I	I I	I I	
7	25930	Acetic acid, mercapto-, 2-chloro- <i>p</i> -menth-8-en-1-yl ester, <i>S</i> -ester with <i>O, O</i> -diethyl phosphorodithioate	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	
8	23030	Acetic acid, mercapto-, ethyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	
9	25650	Acetic acid, mercapto-, ethyl ester, <i>S</i> -ester with <i>O, O</i> -diethyl phosphorodithioate	100 O. 100 Sc.	100 100	I I	----- -----	I I	I I	
10	27386	Acetic acid, mercapto=phenyl-, ethyl ester, <i>S</i> -ester with <i>O, O</i> -dimethyl phosphoro=dithioate	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	
11	27553	Acetimidic acid, <i>N</i> -[(methylcarbamoyl)=oxy]-, ethyl ester	100 O. 100 Sc.	N 10	----- -----	I I	I I	I 10	
12	27568	Acetimidic acid, <i>N</i> -[(methylcarbamoyl)oxy]thio-, ethyl ester	100 O. 100 Sc.	25 25	----- -----	I I	I I	I I	
13	27341	Acetimidic acid, <i>N</i> -[(methylcarbamoyl)oxy]thio-, methyl ester	100 O. 100 Sc.	25 10	----- -----	I I	I I	I I	
14	28464	Acetoacetamide, <i>N</i> -piperonyl-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	
15	25623	Acetoacetic acid, 2-phosphono-, triethyl ester	100 O. 100 Sc.	50 5	I I	----- -----	I I	I I	
16	26275	Acetone, dimethyl acetal	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	
17	23575	<i>p</i> -Acetophenetidine, 2-chloro-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	
18	25499	Acetophenone, 3'-(benzyloxy)-	100 O. 100 Sc.	100 N	I I	----- -----	I I	I I	
19	26014	Acetophenone, 3'-ethoxy-	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	
20	26007	Acetophenone, 4'-ethoxy-3'-methoxy-	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
21	26006	Acetophenone, 4'-ethoxy-2-phenyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
22	27029	Acetophenone, 4'-nitro-, O-(phosphonothio)=oxime, diethyl ester	100 O. 25 Sc.	100 25	----- -----	I I	I I	I I	I I
23	26325	Acrylamide, N-(1,1,3,3-tetramethylbutyl)-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
24	26034	Acrylanilide, 3',4'-dichloro-2-methyl-	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
25	27402	β -Alanine, N-phenyl-, hydrazide	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
26	23112	Alipal CO-436, ammonium salt of a sulfate ester of an alkylphenoxypoly(ethyleneoxy)ethanol	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
27	31838	Aniline, N,N-bis(2-chloroethyl)-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
28	26289	Anthranilic acid, 1-naphthyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
29	28018	Benzamide, o-amino-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
30	26176	Benzenethiol, p-tert-butyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
31	26999	Benzoic acid, 4,4'-dichloro-, isopropyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
32	50598	Benzimidazole, 2-(4-thiazolyl)-	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I
33	27438	1-Benzimidazole=carboxylic acid, 5,6-dichloro-2-(trifluoromethyl)-, phenyl ester	100 O. 100 Sc.	25 50	----- -----	I I	I I	I I	I I
34	27342	Benzimidic acid, p-chloro-N-[(methylcarbamoyl)=oxy]thio-, methyl ester	100 O. 100 Sc.	N 100	----- -----	I 100 ^b	I 100 ^b	I 100	I I
35	26784	Benzoic acid, m-(piperidinocarbonyl)-, methyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
36	25363	Benzophenone, 2,2'-dihydroxy-4-methoxy-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
37	27125	2H-1-Benzopyran-3-acetic acid, 7-hydroxy-, 4-dimethyl-2-oxo-, ethyl ester, O-ester with O,O-diethyl phosphorothioate	100 O. 100 Sc.	50 25	----- -----	100 100	100 100	I I	I I
38	27126	2H-1-Benzopyran-3-acetic acid, 7-hydroxy-4-methyl-2-oxo-, ethyl ester, O-ester with O,O-diethyl phosphorothioate	100 O. 100 Sc.	25 25	----- -----	I 50	50 ^b I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
39	27124	2H-1-Benzopyran-3-acetic acid, 7-hydroxy-4-methyl-2-oxo-, methyl ester, <i>O</i> -ester with <i>O,O</i> -diethyl phosphorothioate	100 O. 100 Sc.	25 10	----- -----	25 ^b I	25 ^b I	I 25	I I
40	28017	1,2,3-Benzotriazin-4(3H)-one	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
41	25718	Bi-2,4-cyclopentadien-1-yl, decachloro-	100 O. 100 Sc.	100 10	----- -----	I I	I I	I I	I I
42	27138	3-Biphenylcarboxanilide, 2'',4',4'',5,5''-pentachloro-2-hydroxy-	100 O. 100 Sc.	25 50	----- -----	I I	I I	I I	I I
43	27140	3-Biphenylcarboxanilide, 2'',4',5,5''-tetra-chloro-2-hydroxy-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
44	27137	3-Biphenylcarboxanilide, 2'',4'',5,5''-tetra-chloro-2-hydroxy-	100 O. 100 Sc.	50 50	----- -----	I I	I I	I I	I I
45	27135	3-Biphenylcarboxanilide, 2'',5,5''-trichloro-2-hydroxy-	100 O. 100 Sc.	50 50	----- -----	I I	I I	I I	I I
46	27136	3-Biphenylcarboxanilide, 3'',4'',5-trichloro-2-hydroxy-	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
47	27139	3-Biphenylcarboxanilide, 4',4'',5-trichloro-2-hydroxy-	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
48	24351	Borneol, propionate	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
49	18066-X	Butane, 1,1-bis(<i>p</i> -chloro-phenyl)-2-nitro-, mixture with 1,1-bis(<i>p</i> -chlorophenyl)-2-nitropropane (2:1)	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
50	18304	1,4-Butanediamine, dihydrochloride	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
51	26005	2-Butanone, 1-(<i>p</i> -methoxyphenyl)-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
52	23864-X	3-Buten-2-one, 4-(<i>o</i> -hydroxyphenyl)- (crude)	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
53	25073	3-Buten-2-one, 4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
54	23121	3-Butyn-2-ol, 2-methyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
55	32078	Butyric acid, <i>m</i> -hydroxy=benzylidene ester, propionate	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
56	25693	Butyric acid, 2-chloro-3-hydroxy-3-phosphono-, trimethyl ester	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
57	25697	Butyric acid, 2,3-dibromo-3-hydroxy-, benzyl ester, dimethyl phosphate	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
58	25744	Butyric acid, 2,3-dibromo-3-hydroxy-, <i>p</i> -nitrobenzyl ester, dimethyl phosphate	100 O. 100 Sc.	100 100	I I	----- -----		I I	I I
59	25688	Butyric acid, 2,3-dichloro-3-hydroxy-3-phosphono-, triethyl ester	50 O. 50 Sc.	50 5	I I	----- -----		I I	I I
60	27211	Butyric acid, 4-hydroxy-2-mercapto-, γ -lactone, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
61	27333	Butyric acid, 4-hydroxy-2-mercapto-, γ -lactone, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorothioate	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
62	25926	Butyric acid, 2-hydroxy-4-phenyl-, ethyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
63	25925	Butyric acid, 2-hydroxy-4-phenyl-, methyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
64	25607	Calcium phosphate (low bulk density, high surface area)	100 O. 100 Sc.	N N	I I	----- -----		I I	I I
65	25661	Carbamic acid, 2-mercaptoethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	100 O. 100 Sc.	10 10	10 10	----- -----		I I	25 50
66	25660	Carbamic acid, 2-mercaptoethyl ester, <i>S</i> -ester with <i>O,O</i> -dimethyl phosphorodithioate	100 O. 100 Sc.	N 100	25 25	----- -----		50 50	100 50
67	25868	Carbamic acid, 2-[(mercaptomethyl)thio]ethyl ester, <i>S</i> -ester with <i>O,O</i> -dimethyl phosphorodithioate	100 O. 50 Sc.	100 50	----- -----	I I	I I	I I	I I
68	27046	Carbamic acid, 2-[(mercaptomethyl)thio]ethyl ester, <i>S</i> -ester with <i>O</i> -isopropyl <i>O</i> -methyl phosphorodithioate	50 O. 50 Sc.	1 ^a 1 ^a	----- -----	I I	I I	I I	I I
69	27264	Carbamic acid, acetyl-methyl-, <i>m</i> - <i>tert</i> -butylphenyl ester	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	I I
70	27262	Carbamic acid, acetyl-methyl-, 6-chloro-3,4-xylol ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
71	27263	Carbamic acid, acetyl-methyl-, 4-(dimethylamino)-3,5-xylol ester	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	I I
72	25968	Carbamic acid, butyl-, 2-[(mercaptomethyl)thio]ethyl ester, <i>S</i> -ester with <i>O,O</i> -dimethyl phosphorodithioate	100 O. 100 Sc.	25 50	----- -----	I I	I I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
73	6183	Carbamic acid, dibutyl-, ethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
74	27376	Carbamic acid, dimethyl-, benzo[<i>b</i>]thien-4-yl ester	100 O. 100 Sc.	25 25	----- -----	I I	I I	I I	I I
75	24728	Carbamic acid, dimethyl-, ester with 3-hydroxy-5,5-dimethyl-2-cyclohexen-1-one	100 O. 100 Sc.	100 100	I I	----- -----	----- -----	I 100	I I
76	25922	Carbamic acid, dimethyl-, ester with 3-hydroxy- <i>N,N</i> ,5-trimethylpyrazole-1-carboxamide	100 O. 100 Sc.	25 25	----- -----	50 50	50 50	I I	I I
77	25664	Carbamic acid, dimethyl-, 2-hydroxyethyl ester, <i>O</i> -ester with <i>O,O</i> -diethyl phosphorothioate	100 O. 100 Sc.	N 100	50 100	----- -----	----- -----	100 I	I I
78	25662	Carbamic acid, dimethyl-, 2-mercaptoethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	100 O. 100 Sc.	25 10	25 25	----- -----	----- -----	25 50	25 50
79	19059	Carbamic acid, dimethyl-, 6-methyl-2-propyl-4-pyrimidinyl ester	100 O. 100 Sc.	N 50	I I	----- -----	----- -----	I 100	I I
80	24852	Carbamic acid, dithio-, anhydrosulfide with <i>O,O</i> -diethyl phosphorothioate	100 O. 100 Sc.	50 50	I I	----- -----	----- -----	I I	I I
81	25969	Carbamic acid, ethyl-, 2-[(mercaptomethyl)=thio]ethyl ester, <i>S</i> -ester with <i>O,O</i> -dimethyl phosphorodithioate	100 O. 100 Sc.	50 25	----- -----	25 ^b I	25 ^b I	I I	50 50
82	27179	Carbamic acid, ethyl-, 2-[(mercaptomethyl)=thio]ethyl ester, <i>S</i> -ester with <i>O</i> -isopropyl <i>O</i> -methyl phosphorodithioate	10 O. 10 Sc.	2.5 2.5	----- -----	I I	I I	I I	I I
83	25808	Carbamic acid, (2-hydroxyethyl)-, 2-chloroethyl ester, <i>O</i> -ester with <i>O,O</i> -diethyl phosphorothioate	50 O. 100 Sc.	50 100	I I	----- -----	----- -----	I I	I I
84	25807	Carbamic acid, (2-hydroxyethyl)-, ethyl ester, <i>O</i> -ester with <i>O,O</i> -diethyl phosphorothioate	100 O. 100 Sc.	25 100	I I	----- -----	----- -----	I I	I I
85	25806	Carbamic acid, (2-hydroxyethyl)-, methyl ester, <i>O</i> -ester with <i>O,O</i> -diethyl phosphorothioate	100 O. 100 Sc.	100 N	100 I	----- -----	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
86	25657	Carbamic acid, isopropyl-, 2-mercaptoethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	100 O. 100 Sc.	50 50	50 ^b 50 ^b	----- -----		I 50	I I
87	27404-X	Carbamic acid, (mercaptoacetyl)methyl-, ethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate, 65-percent emulsion concentrate.	100 O. 100 Sc.	25 50	----- -----	I 25	I I	I 50	I I
88	25803	Carbamic acid, (2-mercaptoethyl)-2-chloroethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	50 O. 50 Sc.	10 50	I I	----- -----		I I	I I
89	25804	Carbamic acid, (2-mercaptoethyl)-2-chloroethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	50 O. 50 Sc.	25 25	I I	----- -----		I I	I I
90	25775	Carbamic acid, (2-mercaptoethyl)-, 2-chloroethyl ester, <i>S</i> -ester with <i>O,O</i> -dimethyl phosphorodithioate	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
91	25802	Carbamic acid, (2-mercaptoethyl)-, ethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	50 O. 50 Sc.	2.5 10	I I	----- -----		I I	I I
92	25774	Carbamic acid, (2-mercaptoethyl)-, ethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	100 O. 100 Sc.	5 5	----- -----	I I	I I	I I	I I
93	25801	Carbamic acid, (2-mercaptoethyl)-, ethyl ester, <i>S</i> -ester with <i>O,O</i> -dimethyl phosphorodithioate	100 O. 100 Sc.	50 50	----- -----	I I	100 50 ^b	50 50	100 I
94	27350	Carbamic acid, (methoxyacetyl)methyl-, <i>o</i> -isopropoxyphenyl ester	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
95	25909	Carbamic acid, methyl-, 2-allyl-5-methoxyphenyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
96	25913	Carbamic acid, methyl-, <i>m</i> -[(allyloxy)methoxy]phenyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I 100	I I
97	25906	Carbamic acid, methyl-, <i>m</i> -(allyloxy)phenyl ester	100 O. 100 Sc.	100 50	----- -----	I I	I I	100 50	I I
98	25912	Carbamic acid, methyl-, <i>o</i> -(allyloxy)phenyl ester	100 O. 100 Sc.	50 100	----- -----	I I	I I	I 50	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
99	27041	Carbamic acid, methyl-, benzo[b]thien-4-yl ester	100 O. 100 Sc.	50 25	----- -----	I I	I I	I 25	I I
100	25916	Carbamic acid, methyl-, <i>m</i> -(butoxymethoxy)=phenyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
101	27128	Carbamic acid, methyl-, 5- <i>sec</i> -butyl-2-chloro=phenyl ester	100 O. 100 Sc.	25 5	----- -----	I I	I I	I I	I I
102	25911	Carbamic acid, methyl-, 5- <i>tert</i> -butyl-2-chloro=phenyl ester	100 O. 100 Sc.	50 50	----- -----	I I	I I	I I	I I
103	27212	Carbamic acid, methyl-, <i>o</i> - <i>sec</i> -butylphenyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I
104	25759-X	Carbamic acid, methyl-, <i>sec</i> -butylphenyl ester (mixture of isomers)	50 O. 50 Sc.	10 10	I I	----- -----	----- -----	I I	I I
105	27098	Carbamic acid, methyl-, 5- <i>tert</i> -butyl- <i>m</i> -tolyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
106	25763	Carbamic acid, methyl-, 6-chloro- <i>m</i> -cumenyl ester	100 O. 100 Sc.	50 100	50 100	----- -----	----- -----	50 I	I 100
107	27382	Carbamic acid, methyl-, 4-chloro-2,3-dihydro-2,2-dimethyl-7-benzo= furanyl ester	100 O. 100 Sc.	50 25	----- -----	I I	I I	I I	I I
108	25917	Carbamic acid, methyl-, 2-chloro-5-(2-propynyl=oxy)phenyl ester	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	I I
109	25736	Carbamic acid, methyl-, 6-chloro-3,4-xylyl ester	100 O. 100 Sc.	100 10	I I	----- -----	----- -----	I I	I I
110	25670	Carbamic acid, methyl-, <i>o</i> -cumenyl ester	100 O. 100 Sc.	100 N	I I	----- -----	----- -----	100 25 ^b	I I
111	25928	Carbamic acid, methyl-, 2-(<i>m</i> -cumenyloxy)ethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
112	27214	Carbamic acid, methyl-, <i>o</i> -2-cyclopenten-1-ylphenyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
113	27213	Carbamic acid, methyl-, <i>o</i> -cyclopentylphenyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I
114	27300	Carbamic acid, methyl-, <i>m</i> -cym-5-yl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
115	27300-a	Carbamic acid, methyl-, <i>m</i> -cym-5-yl ester	50 O. 50 Sc.	25 25	----- -----	I I	I I	I I	25 50
116	27109	Carbamic acid, methyl-, 4-(diallylamino)-3,5-xylyl ester	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
117	27164	Carbamic acid, methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester	100 O. 100 Sc.	5 2.5	----- -----	I I	I I	I I	5 ^b 5 ^b

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—			Adult stable flies	Nymphal lone star ticks
					Larvae of—				
					Screw-worm	Secondary screw-worm	Black blow fly		
118	27324	Carbamic acid, methyl-, 2,3-dihydro-2-methyl-7-benzofuranyl ester	100 O. 100 Sc.	25 25	----- -----	I I	10 ^b 25 ^b	I 10	25 25
119	27383	Carbamic acid, methyl-, 2,3-dihydro-2,2,4-trimethyl-7-benzo- furanyl ester	100 O. 100 Sc.	5 5	----- -----	I I	I I	I I	I I
120	25780	Carbamic acid, methyl-, 3,5-diisopropylphenyl ester	100 O. 100 Sc.	N N	I I	----- -----		I I	I I
121	27566	Carbamic acid, methyl-, <i>m</i> -[[[(dimethylamino)=methylene]amino]phenyl ester, hydrochloride	100 O. 100 Sc.	1 1 ^a	----- -----	I I	I I	I I	I I
122	27466	Carbamic acid, methyl-, <i>o</i> -(dimethylamino)phenyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	I 50	100 100
123	27338	Carbamic acid, methyl-, 6-(dimethylamino)thymyl ester	100 O. 100 Sc.	50 50	----- -----	I I	I I	I I	I I
124	25784	Carbamic acid, methyl-, 4-(dimethylamino)- <i>m</i> -tolyl ester	100 O. 100 Sc.	50 50	----- -----	I I	I I	I I	50 ^b 50
125	25766	Carbamic acid, methyl-, 4-(dimethylamino)-3,5-xylyl ester	100 O. 100 Sc.	25 50	25 ^b 50 ^b	----- -----		I I	I I
126	27385	Carbamic acid, methyl-, 2,2-dimethyl-8-chroma- nyl ester	20 O. 20 Sc.	5 5	----- -----	I I	I I	I I	I I
127	27410	Carbamic acid, methyl-, <i>o</i> -(4,5-dimethyl-1,3-dioxolan-2-yl)phenyl ester	100 O. 100 Sc.	100 10	----- -----	I 25	I 25	I I	100 25
128	27392	Carbamic acid, methyl-, ester with methyl 4-hydroxy-2,6-dimethyl- carbanilate	100 O. 100 Sc.	100 100	----- -----	I I	I I	50 25	I I
129	27393	Carbamic acid, methyl-, ester with methyl 4-hydroxy-2-isopropyl- carbanilate	100 O. 100 Sc.	1 ^a 5	----- -----	I I	I I	I I	I I
130	27156	Carbamic acid, methyl-, ester with salicylalde- hyde, diethyl mercaptal	100 O. 100 Sc.	10 5	----- -----	I I	I I	I I	I I
131	9519	Carbamic acid, methyl-, ethyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
132	25671	Carbamic acid, methyl-, <i>o</i> -isopropoxyphenyl ester	100 O. 100 Sc.	50 25	I 25	----- -----		I I	50 25
133	25659	Carbamic acid, methyl-, 2-mercaptoethyl ester, <i>S</i> -ester with <i>O</i> , <i>O</i> -diethyl phosphorodi- thioate	100 O. 100 Sc.	25 25	25 25	----- -----		I 25	50 ^b I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—			Nymphal lone star ticks	
					Screw- worm	Secondary screw- worm	Black blow fly		Adult stable flies
134	25658	Carbamic acid, methyl-, 2-mercaptoethyl ester, <i>S</i> -ester with <i>O,O</i> - dimethyl phosphorodi- thioate	100 O. 100 Sc.	N N	50 50	----- -----	25 50	50 50	
135	25967	Carbamic acid, methyl-, 2-[(mercaptomethyl)= thioethyl ester, <i>S</i> -ester with <i>O,O</i> -dimethyl phosphorodithioate	100 O. 100 Sc.	25 50	----- -----	I 100	I I	I I	50 ^b 50
136	27047	Carbamic acid, methyl-, 2-[(mercaptomethyl)= thioethyl ester, <i>S</i> -ester with <i>O</i> -isopropyl <i>O</i> -meth- yl phosphorodithioate	50 O. 50 Sc.	1 ^a 10	----- -----	I I	I I	I I	I I
137	25908	Carbamic acid, methyl-, <i>m</i> -(methoxymethoxy)= phenyl ester	100 O. 100 Sc.	50 50	----- -----	I I	I I	50 100	50 100
138	27157	Carbamic acid, methyl-, <i>o</i> -[1-(methoxymethyl)= allyl]phenyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	I 100	100 I
139	27044	Carbamic acid, methyl-, 4-methoxy-3,5-xylyl ester	100 O. 100 Sc.	25 25	----- -----	I I	I I	I I	I I
140	27384	Carbamic acid, methyl-, 7-methylbenzo[<i>b</i>]= thien-4-yl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
141	27127	Carbamic acid, methyl-, <i>m</i> -(1-methylbutyl)= phenyl ester	100 O. 100 Sc.	25 25	----- -----	I I	I I	I I	I I
142	27564	Carbamic acid, methyl-, <i>o</i> -(4-methyl-1,3- dioxolan-2-yl)phenyl ester	100 O. 100 Sc.	100 50	----- -----	I 50	100 50	I 25	100 50
143	27407	Carbamic acid, methyl-, 2-methyl-8-quinolyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	100 50	I I
144	27557	Carbamic acid, methyl-, 2-methyl-8-quinolyl ester, sulfate	100 O. 100 Sc.	100 N	----- -----	I I	I I	100 100	I I
145	25726	Carbamic acid, methyl-, 4-(methylthio)-3,5- xylyl ester	100 O. 100 Sc.	10 25	10 100	----- -----		I I	I I
146	25939	Carbamic acid, methyl-, 2-(1-naphthylloxy)= ethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
147	25915	Carbamic acid, methyl-, <i>m</i> -[(2-propynyloxy)= methoxy]phenyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	100 100	I I
148	25914	Carbamic acid, methyl-, <i>o</i> -[(2-propynyloxy)= methoxy]phenyl ester	100 O. 100 Sc.	100 N	----- -----	I I	I I	50 50	100 I
149	25732	Carbamic acid, methyl-, <i>m</i> -(2-propynyloxy)= phenyl ester	100 O. 100 Sc.	25 5	I I	----- -----		I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	Adult stable flies	
150	25810	Carbamic acid, methyl-, <i>o</i> -(2-propynyloxy)-phenyl ester	100 O. 100 Sc.	50 50	50 50	----- -----	----- -----	25 25	50 50
151	27253	Carbamic acid, methyl-, 5,6,7,8-tetrahydro-1-naphthyl ester	100 O. 100 Sc.	100 50	----- -----	I I	I I	I 100	100 I
152	27096	Carbamic acid, methyl-, 2,3,5-trimethylphenyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I
153	25843	Carbamic acid, methyl-, 3,4,5-trimethylphenyl ester	100 O. 100 Sc.	100 N	100 ^b I	----- -----	----- -----	I 50	100 ^b I
154	27352	Carbamic acid, methyl-(phenoxyacetyl)-, <i>m</i> -sec-butylphenyl ester	100 O. 100 Sc.	100 25	----- -----	I I	I I	I I	I I
155	25663	Carbamic acid, propyl-, 2-hydroxyethyl ester, <i>O</i> -ester with <i>O</i> , <i>O</i> -diethyl phosphorothioate	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
156	33210	Carbamic acid, propyldithio-, phenyl ester	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	I I
157	25666	Carbanilic acid, 2-mercaptoethyl ester, <i>S</i> -ester with <i>O</i> , <i>O</i> -diethyl phosphorothioate	100 O. 100 Sc.	50 25	I I	----- -----	----- -----	I I	I I
158	6187	Carbanilic acid, <i>N</i> -ethyl-, ethyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
159	31544	Carbanilic acid, <i>o</i> -methyl-dithio-, methyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
160	60130	Carbanilide, 4,4'-dinitro-, compound with 4,6-dimethyl-2-pyrimidinol	500 O. 500 Sc.	N 500	----- -----	I I	I I	I I	I I
161	25579	Carbonic acid, trithio-, cyclic ester with 2,3-quinoxalinedithiol	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
162	25389	3-Carene	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
163	22053	Cinnamic acid, β -hydroxy-, ethyl ester, diethyl phosphate	100 O. 100 Sc.	25 2.5	I I	----- -----	----- -----	I I	I I
164	26191	Copper, [hexadecachloro-phthalocyaninato(2-)]-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
165	26192	Copper, [phthalocyaninato(2-)]-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
166	26294	<i>o</i> -Cresol, 6- <i>tert</i> -butyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
167	25937	Crotonic acid, 2,4-dinitrophenyl ester	100 O. 100 Sc.	50 N	----- -----	I I	I I	I I	I I
168	25699	Crotonic acid, 2-chloro-3-hydroxy-, α -methylbenzyl ester, dimethyl phosphate	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
169	25695	Crotonic acid, 2-chloro-3-hydroxy-, <i>m</i> -nitrobenzyl ester, dimethyl phosphate	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—				
				Lethal to guinea pig	Causing 100% kill of—			
					Larvae of—			Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	Adult stable flies
170	25696	Crotonic acid, 2-chloro-3-hydroxy-, <i>p</i> -nitrobenzyl ester, dimethyl phosphate	100 O. 100 Sc.	N 50	I I	----- -----	I I	I I
171	25628	Crotonic acid, 3-hydroxy-, benzyl ester, diethyl phosphate	50 O. 25 Sc.	10 10	I I	----- -----	I I	I I
172	25629	Crotonic acid, 3-hydroxy-, benzyl ester, <i>O</i> -ester with <i>O</i> , <i>O</i> -dimethyl phosphorothioate	100 O. 100 Sc.	N N	I I	----- -----	I I	I I
173	25632	Crotonic acid, 3-hydroxy-, benzyl ester, methyl phenyl phosphate	100 O. 100 Sc.	25 25	I I	----- -----	I I	I I
174	25626	Crotonic acid, 3-hydroxy-, <i>o</i> -chlorobenzyl ester, dimethyl phosphate	100 O. 50 Sc.	N 50	I I	----- -----	I I	I I
175	25624	Crotonic acid, 3-hydroxy-, cyclohexyl ester, dimethyl phosphate	100 O. 50 Sc.	N 50	I I	----- -----	I I	I I
176	25625	Crotonic acid, 3-hydroxy-, cyclohexylmethyl ester, dimethyl phosphate	100 O. 100 Sc.	N 50	I I	----- -----	I I	I I
177	25694	Crotonic acid, 3-hydroxy-, decyl ester, dimethyl phosphate	100 O. 100 Sc.	N 100	I I	----- -----	I I	I I
178	24991	Crotonic acid, 3-hydroxy-, 3,4-dichlorobenzyl ester, dimethyl phosphate	100 O. 100 Sc.	100 50	100 I	----- -----	I I	I I
179	25745	Crotonic acid, 3-hydroxy-, 3,4-dimethylbenzyl ester, dimethyl phosphate	100 O. 100 Sc.	N 50	I 50 ^b	----- -----	I I	I I
180	25839	Crotonic acid, 3-hydroxy-, α -ethylbenzyl ester, dimethyl phosphate	100 O. 100 Sc.	N 100	I I	----- -----	I I	I I
181	25633	Crotonic acid, 3-hydroxy-, hexyl ester, dimethyl phosphate	100 O. 100 Sc.	N 50	I I	----- -----	I I	I I
182	24993	Crotonic acid, 3-hydroxy-, methyl ester, <i>p</i> -chlorophenyl ethyl phosphate	100 O. 100 Sc.	25 1	I I	----- -----	I I	I I
183	25572	Crotonic acid, 3-hydroxy-, methyl ester, 2-chloropropyl isopropyl phosphate	100 O. 100 Sc.	50 25	I I	----- -----	I I	I I
184	25513	Crotonic acid, 3-hydroxy-, methyl ester, 2,4-dichlorophenyl ethyl phosphate	100 O. 100 Sc.	N 100	I 100	----- -----	I 100	I I
185	25571	Crotonic acid, 3-hydroxy-, methyl ester, 2,3-dichloropropyl isopropyl phosphate	100 O. 100 Sc.	100 25	I I	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
186	25746	Crotonic acid, 3-hydroxy-, α -methyl- <i>m</i> -nitrobenzyl ester, dimethyl phosphate	100 O. 100 Sc.	N 25	I I	----- -----	----- -----	I I	I I
187	25747	Crotonic acid, 3-hydroxy-, 2-methyl-5-nitrobenzyl ester, dimethyl phosphate	100 O. 100 Sc.	N 10	I I	----- -----	----- -----	I I	I I
188	25578	Crotonic acid, 3-hydroxy-, <i>m</i> -nitrobenzyl ester, dimethyl phosphate	25 O. 25 Sc.	25 25	I I	----- -----	----- -----	I I	I I
189	25577	Crotonic acid, 3-hydroxy-, <i>p</i> -nitrobenzyl ester, dimethyl phosphate	50 O. 10 Sc.	25 1	I I	----- -----	----- -----	I I	I I
190	25630	Crotonic acid, 3-hydroxy-, <i>p</i> -phenylenedimethylene ester, bis(dimethyl phosphate)	50 O. 25 Sc.	50 25	I I	----- -----	----- -----	I I	I I
191	25690	Crotonic acid, 3-hydroxy-2-methyl-, ethyl ester, diethyl phosphate	100 O. 50 Sc.	100 25	I I	----- -----	----- -----	I I	I I
192	26279	1,3-Cyclobutanediol, 2,2,4,4-tetramethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
193	15918	1,3-Cyclobutanedione, tetramethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
194	26330	Cyclohexanecarboxylic acid, 3-formyl-, ethyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
195	26300	1,4-Cyclohexanedimethanol (70 percent <i>trans</i>)	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
196	26281	1,2-Cyclopentanediol, <i>trans</i> -	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
197	27085	Cyclopropane, 1,1-di-chloro-2,2-bis(<i>p</i> -chlorophenyl)-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
198	27339	Cyclopropanecarboxylic acid, 2,2-dimethyl-3-(2-methylpropenyl)-, ester with <i>N</i> -(hydroxymethyl)-1-cyclohexene-1,2-dicarboximide	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
199	23392	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,6,9,10,10-octachloro-1,4,4a,5,6,7,8,8a-octahydro-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	100 ^b I	I I
200	26283	<i>m</i> -Dioxane, 4,4-dimethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
201	26282	<i>m</i> -Dioxane, 4,5-dimethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
202	26302	<i>m</i> -Dioxane, 4,4,5-trimethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
203	26284	<i>m</i> -Dioxane-5-methanol, 4,4-dimethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
204	19473	1,6-Dioxaspiro[4.4]nonane	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
205	27274	Disulfide, butyl	100 O.	50	-----	I	I	I	I
		1,2,2-trichloroethyl	100 Sc.	25	-----	I	I	I	I
206	28024	Disulfide, 1,2-dichloro=	100 O.	N	-----	I	I	I	I
		vinyl methyl	100 Sc.	100	-----	I	I	I	I
207	27022	Disulfide, diethoxyphos=	25 O.	25	-----	I	I	I	I
		phenyl 1-ethoxy- <i>N</i> -	25 Sc.	5	-----	I	I	I	I
		phenylformimidoyl							
208	27027	Disulfide, diethoxyphos=	25 O.	25	-----	I	I	I	I
		phenyl 1-ethoxy- <i>N</i> -	25 Sc.	5	-----	I	I	I	I
		propylformimidoyl							
209	27026	Disulfide, diethoxyphos=	25 O.	25	-----	I	I	I	I
		phenyl 1-isopropoxy- <i>N</i> -	25 Sc.	10	-----	I	I	I	I
		phenylformimidoyl							
210	27025	Disulfide, diethoxyphos=	50 O.	50	-----	I	I	I	I
		phenyl 1-methoxy- <i>N</i> -	50 Sc.	10	-----	I	I	I	I
		phenylformimidoyl							
211	16894	Dithiopyrophosphoric acid, <i>O,O,O,O</i> -	100 O.	N	I	-----		I	I
		tetrapropyl ester	100 Sc.	N	I	-----		I	I
212	25087	6,10-Dodecadien-1-yn-3-ol, 3,7,11-trimethyl-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
213	26661	Dodecanamide, <i>N,N</i> -dimethyl-	100 O.	100	I	-----		I	I
			100 Sc.	100	I	-----		I	I
214	25791-X	2-Dodecanone, polychlorinated	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
215	10519	1,6,10-Dodecatrien-3-ol, 3,7,11-trimethyl-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
216	25089	1,6,10-Dodecatrien-3-ol, 3,7,11-trimethyl-, acetate	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
217	26646-X	Ethane, (tallowamino)- <i>N,N</i> -dipoly(ethylene=oxy)-	100 O.	N	I	-----		I	I
			100 Sc.	100	I	-----		I	I
218	27345	Ethane, 1,1,1-trichloro-2,2-bis(<i>p</i> -chlorophenyl)-, labeled with D	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I
219	26018	Flavone, 3,3',4',5,7-pentahydroxy-	100 O.	N	I	-----		I	I
			100 Sc.	N	100 ^b	-----		I	I
220	27335	Formamidine, <i>N'</i> -(4-chloro- <i>o</i> -tolyl)- <i>N,N</i> -dimethyl-	100 O.	N	-----	I	I	I	I
			100 Sc.	100	-----	I	I	I	I
221	27567	Formamidine, <i>N'</i> -(4-chloro- <i>o</i> -tolyl)- <i>N,N</i> -dimethyl-, hydrochloride	100 O.	100	-----	I	I	I	I
			100 Sc.	100	-----	I	I	I	I
222	17333	2-Furaldehyde, 5-nitro-, semicarbazone	100 O.	100	I	-----		I	I
			100 Sc.	N	I	-----		I	I
223	23602	2-Furanmethanediol, 5-nitro-, diacetate	100 O.	100	I	-----		I	I
			100 Sc.	100	I	-----		I	I
224	23056	2-Furoic acid, ethyl ester	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
225	26258	Glutarimide, 3-[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-, oxime	100 O.	10 ^a	I	-----		I	I
			100 Sc.	100	I	-----		I	I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
226	27155	Glycine, <i>N</i> -carboxy-, <i>N</i> -(1, 1a, 3, 3a, 4, 5, 5a, 5b, 6-decachloroocta-hydro-1, 3, 4-metheno-1 <i>H</i> -cyclobuta[<i>cd</i>]-pentalen-2-yl) ethyl ester	100 O.	100	-----	I	I	I	25
			100 Sc.	100	-----	I	I	I	25
227	25716	Glycine, <i>N</i> -(3-hydroxy-crotonoyl)-, ethyl ester, dimethyl phosphate	100 O.	N	10	-----		100	I
			100 Sc.	100	25	-----		50	100
228	26708	Glyoxylic acid, phenyl-	100 O.	N	I	-----		I	I
			100 Sc.	50	I	-----		I	I
229	7037	Glyoxylic acid, phenyl-, methyl ester	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
230	25920	Heptanamide, <i>N, N</i> , 2-triethyl-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
231	25495	4-Heptanone, 1-phenoxy-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
232	26305	Hexadecanoic acid, 9, 10, 16-trihydroxy-, <i>erythro</i> -	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
233	26306	Hexadecanoic acid, 9, 10, 16-trihydroxy-, methyl ester, <i>erythro</i> -	100 O.	N	I	-----		I	I
			100 Sc.	100	I	-----		I	I
234	26291	Hexanamide, <i>N, N</i> , 2-triethyl-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
235	26365	1-Hexanol, 2, 3-epoxy-2-ethyl-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
236	25498	2-Hexanone, 1-phenoxy-	100 O.	N	I	-----		I	I
			100 Sc.	100	I	-----		I	I
237	26287	Hexylamine, 2-ethyl-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
238	25619	Hydrazine, 1-(1-naphthyl)-2-sulfinyl-	100 O.	100	I	-----		I	I
			100 Sc.	N	I	-----		I	I
239	28026	Hydroxylamine, <i>N, N</i> -diethyl-	100 O.	100	-----	I	I	I	I
			100 Sc.	100	-----	I	I	I	I
240	26780	Isophthalamide, <i>N, N, N', N'</i> -tetraethyl-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
241	32957	Maleanilic acid, 2', 4'-dimethyl-	100 O.	N	I	-----		I	I
			100 Sc.	100	I	-----		I	I
242	26044	<i>p</i> -Menthane, 1, 2:8, 9-diepoxy-	100 O.	N	I	-----		I	I
			100 Sc.	N	I	-----		I	I
243	25966	Methanesulfenic acid, triphosphono-, <i>S</i> -anhydride with thiocyanic acid, hexaethyl ester	100 O.	50	-----	I	I	I	I
			100 Sc.	25	-----	I	I	I	I
244	27254	Methanesulfonamide, <i>N</i> -(<i>p</i> -chlorophenyl)- <i>N</i> -[(1, 1, 2, 2-tetra-chloro-2-fluoroethyl)=thio]-	100 O.	50	-----	I	I	I	I
			100 Sc.	25	-----	I	I	I	I
245	26396	Methanesulfonic acid, ethyl ester	100 O.	N	-----	I	I	I	I
			100 Sc.	100	-----	I	I	I	I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
246	25700-X	6,9-Methano-3H-2,4-benzodioxepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-3-methyl-, chlorinated to contain 70 percent total chlorine	100 O. 100 Sc.	10 100	I I	----- -----	----- -----	I I	I I
247	26046	4,7-Methanoindan, 1,2:5,6-diepoxy-3a,4,5,6,7,7a-hexahydro-, <i>endo</i> -	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
248	27313	4,7-Methanoindan, 1,4,5,6,7,8,8-hepta-chloro-3a,4,7,7a-tetrahydro-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
249	25604	4,7-Methanoindan, 1(or 2),4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
250	27005	4,7-Methanoindan, 1,2,3,4,5,6,7,8,8-nonachloro-3a,4,7,7a-tetrahydro-	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
251	25803	4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-2,3-epoxy-3a,4,7,7a-tetrahydro-	100 O. 100 Sc.	100 N	I I	----- -----	----- -----	I I	I I
252	25963	4,7-Methanoindene-5-carbamic acid, 3a,4,5,6,7,7a-hexahydro-, mercaptomethyl ester, <i>S</i> -ester with <i>O,O</i> -diethyl phosphorodithioate	100 O. 100 Sc.	10 25	----- -----	I I	I I	I I	I I
253	25545	4,7-Methanoisobenzofuran, 1,3,4,5,6,7,8,8-octachloro-1,3,3a,4,7,7a-hexahydro-	100 O. 100 Sc.	1 10	----- -----	I I	I I	I I	I I
254	23872	Methanol, phosphinylidynetri-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
255	27017-X	1,4-Methanonaphthalene, 1,2,3,4,9,9-hexachloro-1,4,4a,5,6,7,8,8a-octahydro-, chlorinated to contain 71.5 percent total chlorine	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
256	25719	1,3,4-Metheno-1H-cyclobuta[cd]pentalene, dodecachlorooctahydro-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
257	27154	1,3,4-Metheno-1H-cyclobuta[cd]pentalene-2-levulinic acid, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-2-hydroxy-, ethyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	100 I	25 25
258	27153	1,3,4-Metheno-1H-cyclobuta[cd]pentalen-2-ol, 1,1a,3,3a,4,5,5,5a,5b,6-decachloro-octahydro-2-methyl-	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—				
				Lethal to guinea pig	Causing 100% kill of—			
					Larvae of—			Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	Adult stable flies
259	26172	Methyl trisulfide	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I
260	25767	4-Morpholineacetonitrile, α -methyl-	100 O. 100 Sc.	25 50	I I	----- -----	----- -----	I I
261	25665	4-Morpholinecarboxylic acid, 2-hydroxyethyl ester, <i>O</i> -ester with <i>O,O</i> -diethyl phosphorothioate	100 O. 100 Sc.	100 100	100 100	----- -----	----- -----	I I
262	26698	2,7-Naphthalenedisulfonic acid, 3,3'-(3,3'-dimethyl-4,4'-biphenylene)bis(azo)bis[5-amino-4-hydroxy-, tetrasodium salt	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I
263	26492	1-Naphthalenesulfonic acid, 3,6-dinitro-, sodium salt	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I
264	18423	2-Naphthoic acid, 4-(3,4-dihydroxyphenyl)-1,2,3,4-tetrahydro-6,7-dihydroxy-3-(hydroxymethyl)-, γ -lactone, β -isomer	100 O. 100 Sc.	100 N	I I	----- -----	----- -----	I I
265	26207-X	National Sticker, 40 percent mixture of ether-linked & cyclic acetal derivatives of sucrose in 60 percent methanol	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I
266	25875	Norbornane, pentachloro-3-(2,2-dichlorocyclopropyl)-2,2-dimethyl-	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I
267	25962-X	2-Norbornanecarbonitrile, 5(or 6)-chloro-6(or 5)-oxo-, <i>O</i> -(methylcarbamoyl) oxime, <i>endo</i> -	50 O. 50 Sc.	5 25	I I	----- -----	----- -----	I I
268	26424	2-Norbornanecarboxylic acid, 5,6-epoxy-, ethyl ester, <i>endo</i> -	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I
269	26056	2-Norbornanecarboxylic acid, 6-formyl-, ethyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I
270	23393	2-Norbornene, 5-(bromo-methyl)-1,2,3,4,7,7-hexachloro-	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I
271	27053	2-Norbornene, 1,2,3,4,7,7-hexachloro-5,6-bis(chloromethyl)-	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I
272	26239	2-Norbornene, 1,2,3,4,7,7-hexachloro-5-[(2,4-dinitrophenoxy)methyl]-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I
273	27256-X	2-Norbornene, 1,2,3,4,7,7-hexachloro-5-(2,2,3,3-tetrafluorocyclobutyl)-, 6 percent powder	100 O. 100 Sc.	N N	----- -----	I I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
274	26240	5-Norbornene-2,3-dicarb=oximide, 1,4,5,6,7,7-hexachloro- <i>N</i> -pentyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
275	26238	5-Norbornene-2,3-dicarb=oxylic acid, 1,4,5,6,7,7-hexachloro-, diallyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
276	8981	5-Norbornene-2-methanol	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
277	25701-X	5(or 2)-Norbornene-2-methanol, 1,4,5,6,7,7-hexachloro-3-[(2-hydroxy-1-methyl-ethoxy)methyl]-, chlorinated to contain 65 percent total chlorine	100 O. 100 Sc.	25 100	I I	----- -----	----- -----	I I	I I
278	3291	Octadecanamide, <i>N,N</i> -dimethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
279	26328	Octadecanoic acid, 9,10-epoxy-, allyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
280	26645	9-Octadecenylamine	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
281	5734	9-Octadecenylamine, <i>N,N</i> -dimethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
282	26660-X	Octanamide, <i>N,N</i> -dimethyl-(50 percent), mixture with related amides	100 O. 100 Sc.	N 50	I I	----- -----	----- -----	I I	I I
283	26663-X	Oleamide, <i>N,N</i> -dimethyl-(80 percent), mixture with related amides	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
284	26353	7-Oxabicyclo[4.1.0]heptane, 3-(epoxy=ethyl)-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
285	26045	7-Oxabicyclo[4.1.0]heptane, 3-vinyl-	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
286	26364	7-Oxabicyclo[4.1.0]heptane-3-carbonitrile	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
287	26366	7-Oxabicyclo[4.1.0]heptane-3-methanol, 4-methyl-, acetate	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
288	25951	Oxalic acid, 1,2-dithio-, bis(anhydrosulfide) with ethylxanthic acid	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I
289	25525	1-Oxaspiro[4.4]nona-6,8-diene, 2,3,6,7,8,9-hexachloro-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
290	25353	1,3-Oxathiolan-2-one	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	I I
291	26329-X	Pentane, 1,2(and 2,3)-epoxy-2,4,4-trimethyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
292	24259	1-Penten-3-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
293	26292	Phenol, <i>o</i> - <i>tert</i> -butyl-	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I

See footnotes at end of table.

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Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Larvae of— Secondary screw-worm	Black blow fly		
294	25569	Phenol, 2, 6-di- <i>tert</i> -butyl-4-nitro-	100 O. 100 Sc.	50 N	I I	----- -----	25 ^b I	I I	
295	25992	Phenol, 2, 4-dichloro-, methanesulfonate	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	
296	25720	Phenol, pentachloro-, carbanilate	100 O. 100 Sc.	100 50	I I	----- -----	I I	I I	
297	26327	Phenol, (1-propan-3-ylidene) tri-	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	
298	27008	Phosphinic acid, [sulfonyl=bis (dichloromethylene)] bis[ethyl-, diethyl ester	50 O. 100 Sc.	50 100	----- -----	I I	I I	I I	
299	25947	Phosphonic acid, [(<i>p</i> -chlorophenyl) sulfonyl]-, <i>O</i> , <i>O</i> -diethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	
300	25601	Phosphonic acid, (2, 2-dichloro-1-hydroxy-vinyl)-, dimethyl ester, acetate	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	
301	25851	Phosphonic acid, ethyl-, ethyl ester, ester with <i>p</i> -hydroxybenzamide	100 O. 100 Sc.	2.5 2.5	2.5 2.5	----- -----	I I	I I	
302	25850	Phosphonic acid, ethyl-, ethyl <i>p</i> -(methylthio) phenyl ester	100 O. 100 Sc.	0.5 .5	1.0 0.5	----- -----	I I	100 I	
303	24419	Phosphonic acid, [mer-capto(trimethoxy=phosphoranylidene) methyl]-, dimethyl ester, <i>S</i> -ester with <i>O</i> , <i>O</i> -dimethyl phosphoro-thioate	100 O. 100 Sc.	N 100	50 100	----- -----	50 100	100 100	
304	25708-X	Phosphonic acid, [<i>o</i> (and <i>m</i>)-nitrophenyl]-, diethyl ester (a mixture of isomers)	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	
305	27011	Phosphonic acid, [(phenyl=dithio) methylidyne]tri-, hexaethyl ester	100 O. 100 Sc.	5 2.5	----- -----	I I	I I	I I	
306	25831	Phosphonodithioic acid, (chloromethyl)-, <i>S-p</i> -chlorophenyl <i>O</i> -isopropyl ester	100 O. 100 Sc.	50 100	I I	----- -----	I I	I I	
307	25833	Phosphonodithioic acid, (chloromethyl)-, <i>S-p</i> -chlorophenyl <i>O</i> -propyl ester	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	
308	25835	Phosphonodithioic acid, (chloromethyl)-, <i>O</i> -ethyl <i>S-p</i> -tolyl ester	100 O. 100 Sc.	N 100	I I	----- -----	I I	I I	
309	25834	Phosphonodithioic acid, (chloromethyl)-, <i>O</i> -isopropyl <i>S-p</i> -tolyl ester	100 O. 100 Sc.	50 N	I I	----- -----	I I	I I	

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—				
				Lethal to guinea pig	Causing 100% kill of—			Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	
310	25731	Phosphonodithioic acid, ethyl-, S-[(2-benzo-thiazolylthio)methyl] <i>O</i> -ethyl ester	100 O. 100 Sc.	5 100	I I	----- -----	I I	I I
311	25765	Phosphonodithioic acid, ethyl-, <i>S-p-tert</i> -butyl-phenyl <i>O</i> -ethyl ester	100 O. 100 Sc.	100 N	100 I	----- -----	I I	I I
312	27251	Phosphonodithioic acid, ethyl-, <i>S-p-tert</i> -butyl-phenyl <i>O</i> -methyl ester	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I
313	25723	Phosphonodithioic acid, ethyl-, <i>S-p</i> -chlorophenyl <i>O</i> -ethyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	100 I
314	25770	Phosphonodithioic acid, ethyl-, <i>S</i> -[(<i>p</i> -chloro-phenyl)thio]methyl] <i>O</i> -ethyl ester	25 O. 50 Sc.	10 25	I I	----- -----	I I	I I
315	25800	Phosphonodithioic acid, ethyl-, <i>S</i> -[(<i>p</i> -chloro-phenyl)thio]methyl] <i>O</i> -methyl ester	50 O. 50 Sc.	50 25	I I	----- -----	I I	I I
316	27045	Phosphonodithioic acid, ethyl-, <i>S</i> -4-chloro- <i>m</i> -tolyl <i>O</i> -ethyl ester	50 O. 50 Sc.	1 ^a 10	----- -----	I I	I I	I I
317	27309	Phosphonodithioic acid, ethyl- <i>S</i> -4-chloro- <i>m</i> -tolyl <i>O</i> -methyl ester	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I
318	27298	Phosphonodithioic acid, ethyl-, <i>S</i> -[(2, 4-dichloro=phenoxy)methyl] <i>O</i> -ethyl ester	100 O. 100 Sc.	25 100	----- -----	I I	I I	I I
319	27012	Phosphonodithioic acid, ethyl-, <i>O</i> -ethyl ester, <i>S,S</i> -diester with <i>N,N</i> -diethyl-2, 2-dimercapto=acetamide	50 O. 50 Sc.	25 25	----- -----	I 25	I I	I I
320	27114	Phosphonodithioic acid, ethyl-, <i>O</i> -ethyl ester, <i>S</i> -ester with 10-(mercaptoacetyl)=phenothiazine	50 O. 50 Sc.	10 10	----- -----	I I	I I	I I
321	27038	Phosphonodithioic acid, ethyl-, <i>O</i> -ethyl ester, <i>S</i> -ester with 2-[(mercaptomethyl) thio]- <i>N</i> -methylacetamide	50 O. 50 Sc.	1 ^a 10	----- -----	I I	I I	I I
322	25796	Phosphonodithioic acid, ethyl-, <i>O</i> -ethyl <i>S</i> -phenyl ester	25 O. 25 Sc.	5 10	I I	----- -----	I I	I I
323	25771	Phosphonodithioic acid, ethyl-, <i>O</i> -ethyl <i>S</i> - <i>o</i> -tolyl ester	50 O. 50 Sc.	25 25	I I	----- -----	I I	I I
324	25713	Phosphonodithioic acid, ethyl-, <i>O</i> -ethyl <i>S-p</i> -tolyl ester	100 O. 100 Sc.	50 50	I I	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
325	25847	Phosphonodithioic acid, ethyl-, <i>O</i> -ethyl <i>S</i> -2,4-xylyl ester	100 O. 100 Sc.	10 N	50 I	----- -----	----- -----	I I	I I
326	27015	Phosphonodithioic acid, ethyl-, <i>O</i> -isobutyl ester, <i>S</i> -ester with <i>N</i> -(mercaptomethyl)phthalimide	100 O. 100 Sc.	25 25	----- -----	I I	I I	I I	I I
327	27249	Phosphonodithioic acid, ethyl-, <i>O</i> -methyl <i>S</i> -phenyl ester	100 O. 100 Sc.	10 50	----- -----	I I	I I	I I	I I
328	27250	Phosphonodithioic acid, ethyl-, <i>O</i> -methyl <i>S</i> - <i>p</i> -tolyl ester	100 O. 100 Sc.	25 25	----- -----	100 100	50 100	I I	I I
329	27372	Phosphonodithioic acid, methyl-, <i>O</i> -benzo[<i>b</i>]=thien-4-yl <i>S</i> -propyl ester	100 O. 100 Sc.	25 50	----- -----	I I	I I	I I	I I
330	27180	Phosphonodithioic acid, methyl-, <i>S</i> -[(<i>p</i> -chlorophenyl)thio]methyl <i>O</i> -methyl ester	100 O. 100 Sc.	50 100	----- -----	50 50	25 I	100 I	I I
331	27406	Phosphonodithioic acid, methyl-, <i>S</i> -4-chloro- <i>m</i> -tolyl <i>O</i> -ethyl ester	100 O. 100 Sc.	10 25	----- -----	I I	I I	I I	I I
332	27185	Phosphonodithioic acid, methyl-, <i>O</i> -2,4-dichlorophenyl <i>S</i> -propyl ester	100 O. 100 Sc.	50 N	----- -----	I I	I I	I I	I I
333	25995	Phosphonodithioic acid, methyl-, <i>O</i> -methyl ester, <i>S</i> -ester with 2-mercapto- <i>N,N</i> -dimethylpropionamide	50 O. 50 Sc.	5 10	----- -----	5 10	5 10	I I	5 10
334	25977	Phosphonodithioic acid, methyl-, <i>O</i> -methyl ester, <i>S</i> -ester with 2-mercapto- <i>N</i> -methylacetamide	100 O. 100 Sc.	10 25	----- -----	10 10	10 10	I I	10 10
335	25961	Phosphonodithioic acid, methyl-, <i>O</i> -methyl <i>S</i> -phenyl ester	100 O. 100 Sc.	25 25	----- -----	50 50	50 100	I 100	I I
336	25846	Phosphonodithioic acid, methyl-, <i>O</i> -methyl <i>S</i> -2,4-xylyl ester	100 O. 100 Sc.	N N	100 I	----- -----	----- -----	I I	I I
337	27186	Phosphonodithioic acid, methyl-, <i>O</i> -phenyl <i>S</i> -propyl ester	100 O. 100 Sc.	25 50	----- -----	I I	I I	I I	I I
338	27227	Phosphonothioic acid, (chloromethyl)-, <i>O</i> -ethyl ester, <i>O</i> -ester with 4-hydroxy- <i>m</i> -anisotriole	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
339	27028	Phosphonothioic acid, (chloromethyl)-, <i>O</i> -ethyl ester, <i>O</i> -ester with <i>p</i> -hydroxybenzonitrile	50 O. 50 Sc.	50 N	----- -----	50 I	50 I	I I	I I
340	25704	Phosphonothioic acid, (chloromethyl)-, <i>O</i> -ethyl <i>O</i> - <i>p</i> -nitrophenyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—			Adult stable flies	Nymphal lone star ticks
					Screw- worm	Secondary screw- worm	Black blow fly		
341	25758	Phosphonothioic acid, (chloromethyl)-, <i>O</i> -isobutyl ester, anhydride with diethyl phosphate	50 O. 50 Sc.	50 5	I I	----- -----	I I	I I	
342	25757	Phosphonothioic acid, (chloromethyl)-, <i>O</i> -isopropyl ester, anhydride with diisopropyl phosphate	25 O. 25 Sc.	25 2.5	I I	----- -----	I I	I I	
343	27373	Phosphonothioic acid, ethyl-, <i>O</i> -(4-bromo- 2,5-dichlorophenyl) <i>O</i> -ethyl ester	100 O. 100 Sc.	50 100	----- -----	50 I	100 I	50 I	I I
344	27374	Phosphonothioic acid, ethyl-, <i>O</i> -(4-bromo- 2,5-dichlorophenyl) <i>O</i> -methyl ester	100 O. 100 Sc.	100 N	----- -----	50 I	50 I	50 I	I I
345	25869	Phosphonothioic acid, ethyl-, <i>O</i> -2-chloroethyl ester, <i>O</i> -ester with <i>p</i> -hydroxybenzonitrile	5 O. 10 Sc.	1 10	I I	----- -----	I I	I I	I I
346	25754	Phosphonothioic acid, ethyl-, <i>O</i> -(2-chloro-4- nitrophenyl) <i>O</i> -ethyl ester	25 O. 25 Sc.	5 10	5 25	----- -----	I I	I I	I I
347	25755	Phosphonothioic acid, ethyl-, <i>O</i> -(2-chloro-4- nitrophenyl) <i>O</i> -isopropyl ester	25 O. 25 Sc.	25 25	10 ^b I	----- -----	I I	I I	I I
348	25769	Phosphonothioic acid, ethyl-, <i>O</i> -(2-chloro-4- nitrophenyl) <i>O</i> -methyl ester	50 O. 100 Sc.	50 100	25 25	----- -----	I I	I I	I 50 ^b
349	25795	Phosphonothioic acid, ethyl-, <i>O</i> - <i>p</i> -chlorophenyl <i>O</i> -ethyl ester	100 O. 100 Sc.	50 N	25 ^b 50 ^b	----- -----	I I	25 I	I I
350	25797	Phosphonothioic acid, ethyl-, <i>O</i> - <i>p</i> -chlorophenyl <i>O</i> -propyl ester	100 O. 100 Sc.	50 N	25 I	----- -----	I I	25 I	I I
351	25798	Phosphonothioic acid, ethyl-, <i>O</i> -2,4-dichloro= phenyl <i>O</i> -ethyl ester	25 O. 50 Sc.	25 50	10 ^b 50	----- -----	I I	10 I	I I
352	25799	Phosphonothioic acid, ethyl-, <i>O</i> -2,5-dichloro= phenyl <i>O</i> -ethyl ester	50 O. 100 Sc.	50 N	25 25	----- -----	I I	10 I	I I
353	25725	Phosphonothioic acid, ethyl-, <i>O</i> -2,4-dichloro= phenyl <i>O</i> -methyl ester	100 O. 100 Sc.	100 100	10 25	----- -----	I I	25 25	I I
354	25733	Phosphonothioic acid, ethyl-, <i>O</i> -ethyl <i>O</i> -[2- (ethylthio)-6-methyl-4- pyrimidinyl] ester	100 O. 100 Sc.	50 25	I I	----- -----	I I	I I	I I
355	25702	Phosphonothioic acid, ethyl-, <i>O</i> -[2-(ethylthio)- 6-methyl-4-pyrimidinyl] <i>O</i> -methyl ester	100 O. 100 Sc.	N 100	25 50	----- -----	I I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
356	25712	Phosphonothioic acid, ethyl-, <i>O</i> -ethyl <i>O</i> -2,4,5-trichlorophenyl ester	100 O. 100 Sc.	50 N	25 I	----- -----	----- -----	50 I	I I
357	25852	Phosphonothioic acid, ethyl-, <i>O</i> -methyl ester, <i>O</i> -ester with 7-hydroxy-4-methylcoumarin	100 O. 100 Sc.	2.5 2.5	5 ^b 5 ^b	----- -----	----- -----	I I	I I
358	27375	Phosphonothioic acid, methyl-, <i>O</i> -(4-bromo-2,5-dichlorophenyl) <i>O</i> -isopropyl ester	100 O. 100 Sc.	50 100	----- -----	50 I	50 I	50 I	I I
359	25785	Phosphonothioic acid, methyl-, <i>O</i> -2-chloroallyl <i>O</i> - <i>p</i> -nitrophenyl ester	50 O. 50 Sc.	10 50	I I	----- -----	----- -----	I I	I I
360	25789	Phosphonothioic acid, methyl-, <i>O</i> -2-chloroallyl <i>O</i> -(α,α,α -trifluoro-4-nitro- <i>m</i> -tolyl) ester	100 O. 100 Sc.	100 100	I I	----- -----	----- -----	I I	I I
361	25788	Phosphonothioic acid, methyl-, <i>O</i> -chlorobutyl <i>O</i> -(α,α,α -trifluoro-4-nitro- <i>m</i> -tolyl) ester	100 O. 100 Sc.	50 50	100 I	----- -----	----- -----	100 I	I I
362	25714	Phosphonothioic acid, methyl-, <i>O</i> -2,4-dichlorophenyl <i>O</i> -ethyl ester	100 O. 100 Sc.	25 100	25 I	----- -----	----- -----	50 100	I I
363	27033	Phosphonothioic acid, methyl-, <i>O</i> -ethyl ester, <i>O</i> -ester with <i>p</i> -hydroxybenzonitrile	10 O. 10 Sc.	2.5 5	----- -----	I I	I I	I I	I I
364	25616	Phosphonothioic acid, methyl-, <i>O</i> -ethyl <i>O</i> -[<i>p</i> -(ethylsulfinyl)phenyl] ester	100 O. 100 Sc.	2.5 5	25 2.5	----- -----	----- -----	I I	100 25
365	25617	Phosphonothioic acid, methyl-, <i>O</i> -ethyl <i>O</i> -[<i>p</i> -(ethylsulfonyl)phenyl] ester	50 O. 50 Sc.	1.0 0.1	I 50	----- -----	----- -----	I I	I I
366	25615	Phosphonothioic acid, methyl-, <i>O</i> -methyl <i>O</i> -[<i>p</i> -(methylsulfinyl)phenyl] ester	10 O. 10 Sc.	2.5 2.5	2.5 ^b 2.5 ^b	----- -----	----- -----	I I	I I
367	25787	Phosphonothioic acid, methyl-, <i>O</i> - <i>p</i> -nitrophenyl <i>O</i> -phenyl ester	50 O. 50 Sc.	1 ^a 10	I I	----- -----	----- -----	I I	I I
368	25786	Phosphonothioic acid, methyl-, <i>O</i> - <i>p</i> -nitrophenyl <i>O</i> -propyl ester	50 O. 50 Sc.	1 ^a 10	I I	----- -----	----- -----	I I	I I
369	25870	Phosphonothioic acid, methyl-, <i>O</i> -phenyl ester, <i>O</i> -ester with <i>p</i> -hydroxybenzonitrile	100 O. 100 Sc.	1 ^a 5	50 50	----- -----	----- -----	I I	I I
370	27343	Phosphonothioic acid, phenyl-, <i>O</i> -(4-bromo-2,5-dichlorophenyl) <i>O</i> -ethyl ester	100 O. 100 Sc.	100 100	----- -----	100 100	100 I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—				
				Lethal to guinea pig	Causing 100% kill of—			Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	
371	25832	Phosphonothioic acid, phenyl-, <i>O</i> -ethyl ester, <i>O</i> -ester with <i>p</i> -hydroxybenzoxonitrile	100 O. 100 Sc.	50 100	25 ^b 50 ^b	----- -----	15 I	I I
372	25845	Phosphonotrithioic acid, methyl-, <i>p</i> -chlorophenyl ethyl ester	100 O. 100 Sc.	N N	I I	----- -----	I I	I I
373	27192	Phosphoramidic acid, methyl-, 2-chloro-4- <i>tert</i> -pentylphenyl methyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I
374	25964	Phosphoramidic acid, methyl-, 2,4-dichloro-phenyl propyl ester	100 O. 100 Sc.	100 100	I I	----- -----	I 100	I I
375	24688	Phosphoramidothioic acid, <i>O</i> -3,4-dichlorophenyl <i>O</i> -methyl ester	100 O.	N	-----	100	I	I
376	27396	Phosphoramidothioic acid, <i>O</i> , <i>S</i> -dimethyl ester	100 O. 100 Sc.	10 10	----- -----	5 2.5	5 5	5 5
377	27398	Phosphoramidothioic acid, <i>O</i> -ethyl <i>S</i> -methyl ester	100 O. 100 Sc.	5 5	----- -----	10 10	25 25	I I
378	24687	Phosphoramidothioic acid, ethyl-, <i>O</i> -2,4-dichloro-phenyl <i>O</i> -methyl ester	100 O.	N	-----	25	25	50
379	24685	Phosphoramidothioic acid, ethyl-, <i>O</i> -3,4-dichloro-phenyl <i>O</i> -methyl ester	100 O.	N	-----	25	10	100
380	27023	Phosphoramidothioic acid, [ethyl(2-hydroxyethyl) thiocarbonyl]-, <i>O</i> , <i>O</i> -dimethyl ester	10 O. 10 Sc.	5 5	----- -----	I I	I I	I I
381	27034	Phosphoramidothioic acid, [ethyl(2-hydroxypropyl) thiocarbonyl]-, <i>O</i> , <i>O</i> -dimethyl ester	25 O. 25 Sc.	5 10	----- -----	I I	I I	I I
382	27239	Phosphoramidothioic acid, [(2-hydroxyethyl) methylthiocarbonyl]-, <i>O</i> , <i>O</i> -dimethyl ester	25 O. 25 Sc.	10 10	----- -----	I I	I I	I I
383	27032	Phosphoramidothioic acid, [(2-hydroxyethyl) propylthiocarbonyl]-, <i>O</i> , <i>O</i> -dimethyl ester	25 O. 25 Sc.	25 10	----- -----	I I	I I	I I
384	27035	Phosphoramidothioic acid, [(2-hydroxypropyl)=methylthiocarbonyl]-, <i>O</i> , <i>O</i> -dimethyl ester	100 O. 100 Sc.	10 10	----- -----	100 100	50 I	I I
385	27314	Phosphoramidothioic acid, isopropyl-, <i>O</i> -ethyl ester, <i>S</i> -ester with 2-mercapto- <i>N</i> -methoxy- <i>N</i> -methyl-acetamide	100 O. 100 Sc.	25 10	----- -----	25 50	50 50	I I
386	24680	Phosphoramidothioic acid, methyl-, <i>O</i> - <i>p</i> -chloro-phenyl <i>O</i> -methyl ester	100 O.	100	-----	25	25	25

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	Adult stable flies	
387	24683	Phosphoramidothioic acid, methyl-, <i>O</i> -2,4-di-chlorophenyl <i>O</i> -methyl ester	100 O.	N	-----	100	25	50	I
388	25934	Phosphoramidothioic acid, s-triazol-3-yl-, <i>O</i> , <i>O</i> -diethyl ester	100 O. 100 Sc.	25 50	----- -----	I I	I I	I I	I I
389	25815	Phosphoric acid,1-(benzylthio) vinyl diethyl ester	50 O. 50 Sc.	10 10	I 10 ^b	----- -----	I I	I I	I I
390	27099	Phosphoric acid, 1-(4-bromo-2-chlorophenyl)-2-chlorovinyl dimethyl ester	100 O. 100 Sc.	N 50	----- -----	I I	I I	I 25	I I
391	27019	Phosphoric acid, 1-(2-bromo-4, 5-dichlorophenyl)-2-chlorovinyl dimethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
392	27021	Phosphoric acid, 1-(4-bromo-2, 5-dichlorophenyl)-2-chlorovinyl dimethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
393	27043	Phosphoric acid, 2-bromo-1-(2,4-dichlorophenyl)=vinyl dimethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I 100	I I
394	25753	Phosphoric acid, 3- <i>tert</i> -butoxy-2-chloropropenyl dimethyl ester	100 O. 100 Sc.	100 100	100 100	----- -----	I I	I I	I I
395	25749	Phosphoric acid, 3- <i>tert</i> -butoxy-2-chloropropenyl methyl phenyl ester	100 O. 100 Sc.	N 50	I 50	----- -----	I I	I I	I I
396	25592	Phosphoric acid, 1-(2-butoxyethoxy)-2,2-dichlorovinyl dimethyl ester	100 O. 100 Sc.	N 25	I I	----- -----	I I	I I	I I
397	25849	Phosphoric acid, butyl ethyl ester, ester with <i>N</i> -hydroxynaphthalimide	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	I I
398	25840	Phosphoric acid, 2-chloro-1-(2,4-dibromophenyl)=vinyl dimethyl ester	100 O. 100 Sc.	N 50	----- -----	I 50	I I	I 50	I I
399	27020	Phosphoric acid, 2-chloro-1-(2,5-dibromophenyl)=vinyl dimethyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I
400	25818	Phosphoric acid, 2-chloro-1-(2,4-dichlorophenyl)=vinyl dimethyl ester	100 O. 100 Sc.	N 100	100 10	----- -----	I I	I 50	I 50 ^b
401	27018	Phosphoric acid, 2-chloro-1-(2,5-dichlorophenyl)=vinyl dimethyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I
402	25816	Phosphoric acid, 1-[(<i>p</i> -chlorophenyl) thio]vinyl dimethyl ester	50 O. 50 Sc.	50 10	I I	----- -----	I I	I I	I I
403	25752	Phosphoric acid, 2-chloropropyl 1,2-dibromo-2,2-dichloroethyl ethyl ester	100 O. 100 Sc.	100 25	100 25	----- -----	I I	I I	I 100

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—				
				Lethal to guinea pig	Causing 100% kill of—			
					Larvae of—			Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	Adult stable flies
404	25751	Phosphoric acid, 2-chloro-propyl 2,2-dichlorovinyl ethyl ester	100 O. 100 Sc.	25 10	100 25	----- -----	I I	I I
405	24942	Phosphoric acid, 3-chloro-propyl 2,2-dichlorovinyl ethyl ester	100 O. 100 Sc.	100 25	I I	----- -----	I I	I I
406	25842	Phosphoric acid, 2-chloro-1-(2,4,5-trichloro-phenyl)vinyl diethyl ester	100 O. 100 Sc.	N 100	I 50 ^b	----- -----	I I	I I
407	25841	Phosphoric acid, 2-chloro-1-(2,4,5-trichloro-phenyl)vinyl dimethyl ester	100 O. 100 Sc.	N 100	I 50	----- -----	I I	I I
408	27119	Phosphoric acid, 2-chloro-1-(2,4,5-trichloro-phenyl)vinyl ethyl methyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I 50
409	25692	Phosphoric acid, 1-cyclohexen-1-yl diethyl ester	100 O. 100 Sc.	100 50	I I	----- -----	I I	I I
410	25748	Phosphoric acid, 1,2-dibromo-3- <i>tert</i> -butoxy-2-chloropropyl dimethyl ester	100 O. 100 Sc.	N 50	I I	----- -----	I I	I I
411	25750	Phosphoric acid, 1,2-dibromo-2,2-dichloroethyl 2,3-dichloropropyl ethyl ester	100 O. 100 Sc.	100 50	100 100	----- -----	I I	I I
412	25698	Phosphoric acid, 1,2-dibromo-2,2-dichloroethyl methyl phenyl ester	100 O. 100 Sc.	N 25	I I	----- -----	I I	I I
413	25590	Phosphoric acid, 2,2-dichloro-1-[2-(hexyloxy)ethoxy]vinyl dimethyl ester	100 O. 100 Sc.	N 100	I I	----- -----	I I	I I
414	25560	Phosphoric acid, 2,2-dichloro-1-(2-methoxyethoxy)vinyl dimethyl ester	100 O. 100 Sc.	100 50	I I	----- -----	I I	I I
415	25591	Phosphoric acid, 2,2-dichloro-1-(2-phenoxyethoxy)vinyl dimethyl ester	100 O. 100 Sc.	N 10	I I	----- -----	I I	I I
416	27191	Phosphoric acid, 2,4-dichlorophenyl dimethyl ester	100 O. 100 Sc.	N 50	----- -----	I I	I I	I 50
417	25686	Phosphoric acid, 2,2-dichloro-1-phenylvinyl diethyl ester	100 O. 100 Sc.	N 100	I I	----- -----	I I	I I
418	25689	Phosphoric acid, 2,3-dichloropropyl 2,2-dichlorovinyl ethyl ester	100 O. 100 Sc.	25 100	100 100	----- -----	I I	I I
419	25940	Phosphoric acid, diethyl 2,3-bis(ethylthio)propenyl ester	100 O. 100 Sc.	25 25	----- -----	I I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—			Adult stable flies	Nymphal lone star ticks
					Larvae of—				
				Screw-worm	Secondary screw-worm	Black blow fly			
420	25567	Phosphoric acid, diethyl ester, ester with <i>N</i> -hydroxynaphthalimide	100 O. 100 Sc.	N 100	I I	----- -----	I I	I I	
421	25814	Phosphoric acid, diethyl 1-(phenylthio)vinyl ester	25 O. 25 Sc.	1 1	25 25	----- -----	I I	I I	
422	27129	Phosphoric acid, dimethyl ester, ester with 3-hydroxy- <i>N</i> -methyl- <i>cis</i> -crotonamide	100 O. 100 Sc.	50 50	----- -----	5 5	5 5	25 10	5 5
423	23970	Phosphorochloridithioic acid, cyclic <i>O, O</i> -ester with 2-hydroxy- α -methylcyclohexane= methanol	100 O. 100 Sc.	50 50	I I	----- -----	I I	I I	I I
424	24679	Phosphorochloridithioic acid, <i>O, O</i> -dibutyl ester	50 O. 50 Sc.	N N	I I	----- -----	I I	----- -----	----- -----
425	27240	Phosphorodiamidic acid, tetramethyl-, penta=chlorophenyl ester	100 O. 100 Sc.	50 50	----- -----	I I	I I	I I	I I
426	25873	Phosphorodithioic acid, <i>S</i> -[(2-benzothiazolyl=thio)methyl] <i>O, O</i> -diethyl ester	100 O. 100 Sc.	25 50	I I	----- -----	I I	I I	I I
427	25739	Phosphorodithioic acid, <i>S</i> -benzylidene <i>O, O</i> -dimethyl ester	100 O. 100 Sc.	N 100	I I	----- -----	I I	I I	I I
428	25556	Phosphorodithioic acid, <i>S</i> -[(benzylthio)methyl] <i>O, O</i> -diethyl ester	25 O. 25 Sc.	2.5 10	25 10	----- -----	I I	I I	I I
429	22751	Phosphorodithioic acid, <i>S</i> - <i>p</i> -chlorobenzyl <i>O, O</i> -diethyl ester	100 O. 100 Sc.	N 100	I I	----- -----	I I	I I	I I
430	25679	Phosphorodithioic acid, <i>S</i> -[<i>p</i> -chloro- α -(<i>p</i> -chloro=phenyl)benzyl] <i>O, O</i> -diisopropyl ester	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	I I
431	25948	Phosphorodithioic acid, <i>S</i> -chloro-2-norbornyl <i>O, O</i> -diethyl ester	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	I I
432	25682	Phosphorodithioic acid, <i>S</i> -(<i>p</i> -chloro- α -phenyl=benzyl) <i>O, O</i> -diethyl ester	100 O. 100 Sc.	N N	I I	----- -----	I I	I I	I I
433	25683	Phosphorodithioic acid, <i>S</i> -(<i>p</i> -chloro- α -phenyl=benzyl) <i>O, O</i> -dimethyl ester	100 O. 100 Sc.	N N	100 I	----- -----	I I	100 I	I I
434	25596	Phosphorodithioic acid, <i>S</i> -[2-(<i>p</i> -chlorophenyl)thio]ethyl <i>O, O</i> -dimethyl ester	100 O. 100 Sc.	N 50	25 I	----- -----	I I	50 I	I I
435	25586	Phosphorodithioic acid, <i>S</i> -[(<i>p</i> -chlorophenyl)thio]methyl <i>O, O</i> -dimethyl ester	100 O. 100 Sc.	N N	50 I	----- -----	I I	I I	I I

See footnotes at end of table.

TABLE 1.—Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
436	25760	Phosphorodithioic acid, S-[(4,6-diamino-s-triazin-2-yl)methyl] O,O-dimethyl ester	100 O. 100 Sc.	N 100	----- -----	50 25	50 100	I I	50 100
437	25953	Phosphorodithioic acid, S-dibromocyclopentyl O,O-diethyl ester	50 O. 50 Sc.	50 50	----- -----	I I	I I	I I	I I
438	25608	Phosphorodithioic acid, S-[(3,3-dichloroallyl)=thio]methyl] O,O-dimethyl ester	100 O. 100 Sc.	N 100	50 I	----- -----	----- -----	I I	I I
439	25655	Phosphorodithioic acid, S-[[[3,5-dichlorophenyl)thio]methyl] O,O-dimethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	100 ^b I	I I	I I
440	25929	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 1-benzoyl-3-(mercaptomethyl)-5,5-dimethylhydantoin	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
441	27269	Phosphorodithioic acid, O,O-diethyl ester, S-ester with N-(2-bromo-1-mercaptoethyl) phthalimide	25 O. 50 Sc.	25 50	----- -----	I I	I I	I I	I I
442	27320	Phosphorodithioic acid, O,O-diethyl ester, S-ester with N-(2-chloro-1-mercaptoethyl) phthalimide	100 O. 100 Sc.	50 25	----- -----	I I	I I	I I	I I
443	27163	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 6-chloro-3-(mercaptomethyl)-2-benzoxazolinone	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
444	25648	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 6-chloro-2-(mercaptomethyl)-3(2H)-pyridazinone	25 O. 25 Sc.	5 2.5	I I	----- -----	----- -----	I I	I I
445	27312	Phosphorodithioic acid, O,O-diethyl ester, S-ester with N-(2-cyanoethyl)-2-mercaptoacetanilide	100 O. 100 Sc.	25 25	----- -----	I I	I I	I I	I I
446	25932	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 5-(ethoxymethylene)-3-(mercaptomethyl) rhodanine	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	I I
447	25949	Phosphorodithioic acid, O,O-diethyl ester, S-ester with 5-ethyl-3-(mercaptomethyl)-4-oxazolin-2-one	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
448	25950	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with 4-(hydroxymethyl)-3-(mercapto-methyl)-4-methyl-2-oxazolidinone	100 O. 100 Sc.	5 25	----- -----	I I	I I	I I	I I
449	25874	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with 1-(mercaptoacetyl)-1-methylurea	25 O. 25 Sc.	10 10	----- -----	I I	I I	I I	I I
450	22748	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with <i>N</i> -(2-mercaptoethyl)succinimide	100 O. 100 Sc.	100 25	100 25	----- -----	----- -----	25 25	100 25
451	25941	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with <i>N</i> -(mercapto-methyl)acrylamide	100 O. 100 Sc.	25 50	----- -----	I I	I I	I I	I I
452	25871	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with 3-(mercapto-methyl)-2-benzoxazolinone	100 O. 100 Sc.	10 100	----- -----	I I	I I	I I	I I
453	25952	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with 3-(mercapto-methyl)-5-methyl-2,4-thiazolidinedione	100 O. 100 Sc.	25 50	----- -----	I I	I I	I I	I I
454	24867	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with <i>N</i> -(mercapto-methyl)-5-norbornene-2,3-dicarboximide	100 O. 100 Sc.	25 50	I I	----- -----	----- -----	I I	I I
455	25945	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with 3-(mercapto-methyl)-2-oxazolidinone	100 O. 100 Sc.	25 10	----- -----	I I	I I	I I	I I
456	25959	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with 3-(mercapto-methyl) phthalide	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	I I
457	27295	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with 3-(mercapto-methyl)-2,4-thiazolidinedione	50 O. 50 Sc.	10 25	----- -----	I I	I I	I I	I I
458	27070	Phosphorodithioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with mercapto-2-propanone, diethyl mercaptole	25 O. 25 Sc.	5 ^a 25	----- -----	I I	I I	I I	I I
459	25931	Phosphorodithioic acid, <i>O,O</i> -diethyl <i>S</i> -[2-(ethylthio)-6-methyl-4-pyrimidinyl] ester	100 O. 100 Sc.	50 50	----- -----	I I	I I	100 I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
460	27159	Phosphorodithioic acid, <i>O,O</i> -diethyl <i>S</i> -9-thia-bicyclo[4.2.1]nonenyl ester	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
461	25622	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S,S</i> -diester with 1,1'-thiodi-2-propanethiol	100 O. 100 Sc.	N 100	100 I	----- -----	----- -----	100 I	I I
462	27268	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with <i>N</i> -(2-bromo-1-mercaptoethyl)phthalimide	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
463	27321	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with <i>N</i> -(2-chloro-1-mercaptoethyl)phthalimide	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
464	25828	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with <i>N,N'</i> -diethyl-2-mercaptomalonamide	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
465	27238	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 2-ethoxy-4-(mercaptomethyl)- Δ^2 -1,3,4-thiadiazolin-5-one	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	I I
466	27257	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with <i>N</i> -formyl-2-mercapto- <i>N</i> -methylacetamide	100 O. 100 Sc.	N N	----- -----	25 25	10 25	100 50	100 100
467	27310	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 2-mercapto- <i>N,N'</i> -dimethoxy- <i>N,N'</i> -dimethylsuccinamide	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	50 100
468	27113	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 2-[(2-mercaptoethyl)sulfinyl]- <i>N</i> -methylpropionamide	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	100 100
469	27112	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 2-[(2-mercaptoethyl)thio]- <i>N</i> ,2-dimethylpropionamide	100 O. 100 Sc.	50 100	----- -----	I I	I I	100 50	50 50
470	26613	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 2-[(2-mercaptoethyl)thio]- <i>N</i> -methylpropionamide	100 O. 100 Sc.	N N	50 I	----- -----	----- -----	100 I	25 50
471	27160	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 2-mercapto- <i>N</i> -(2-methoxyethyl)acetamide	100 O. 100 Sc.	N 100	----- -----	50 100	50 50	50 100	100 100

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
472	27110	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 3-(mercapto-methyl)-2-benzoxazolinone	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
473	27193	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 4-(mercapto-methyl)-2-methoxy- Δ^2 -1,3,4-thiadiazolin-5-one	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	I I
474	25705	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with <i>N</i> -(mercapto-methyl)phthalimide	100 O. 100 Sc.	N N	100 100	----- -----	----- -----	I I	I I
475	27296	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with 3-(mercapto-methyl)-2,4-thiazolidinedione	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	I I
476	27072	Phosphorodithioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with mercapto-2-propanone, diethyl mercaptole	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	100 I
477	27071	Phosphorodithioic acid, <i>O,O</i> -dimethyl <i>S</i> -[(2-methyl-1,3-oxathiolan-2-yl)methyl] ester	100 O. 100 Sc.	100 100	----- -----	100 I	100 I	50 I	100 100
478	25703	Phosphorodithioic acid, <i>O,O</i> -dimethyl <i>S</i> -[(5-nitro-1 <i>H</i> -indazol-1-yl)methyl] ester	100 O. 100 Sc.	N 100	I 100 ^b	----- -----	----- -----	I 50	I I
479	25588	Phosphorodithioic acid, <i>O,O</i> -dimethyl <i>S</i> -[(<i>p</i> -nitrophenyl)thio]methyl ester	100 O. 100 Sc.	N 25	100 I	----- -----	----- -----	I I	I I
480	25594	Phosphorodithioic acid, <i>O,O</i> -dimethyl <i>S</i> -[(phenylthio)methyl] ester	100 O. 100 Sc.	N N	25 50	----- -----	----- -----	I I	I I
481	25737	Phosphorodithioic acid, <i>S</i> -4,6-dimethyl-2-pyrimidinyl <i>O,O</i> -diethyl ester	50 O. 50 Sc.	10 25	50 50	----- -----	----- -----	I I	I I
482	27123	Phosphorodithioic acid, <i>S</i> -4,6-dimethyl-2-pyrimidinyl <i>O</i> -ethyl <i>O</i> -isopropyl ester	100 O. 100 Sc.	5 25	----- -----	I I	I I	I I	I I
483	27122	Phosphorodithioic acid, <i>S</i> -4,6-dimethyl-2-pyrimidinyl <i>O</i> -ethyl <i>O</i> -propyl ester	100 O. 100 Sc.	2.5 25	----- -----	I I	I I	I I	I I
484	27158	Phosphorodithioic acid, <i>O,O</i> -dimethyl <i>S</i> -9-thia-bicyclo[4.2.1]nonenyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I

See footnotes at end of table.

TABLE 1.—Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
485	25681	Phosphorodithioic acid, S-diphenylmethyl O,O-diethyl ester	100 O. 100 Sc.	N N	100 I	----- -----	----- -----	100 I	I I
486	25680	Phosphorodithioic acid, S-diphenylmethyl O,O-dimethyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
487	27318	Phosphorodithioic acid, O-ethyl S,S-dipropyl ester	100 O. 100 Sc.	50 25	----- -----	I I	I I	I I	I I
488	25866	Phosphorodithioic acid, O-ethyl O-isopropyl ester, S-ester with N-(mercaptomethyl)=phthalimide	100 O. 100 Sc.	25 50	I I	----- -----	----- -----	I I	I I
489	25865	Phosphorodithioic acid, O-ethyl O-methyl ester, S-ester with N-(mercaptomethyl)phthalimide	100 O. 100 Sc.	25 50	25 50	----- -----	----- -----	I I	I 50
490	25864	Phosphorodithioic acid, O-ethyl O-propyl ester, S-ester with N-mercapto-methyl phthalimide	100 O. 100 Sc.	10 50	I I	----- -----	----- -----	I I	I I
491	25820	Phosphorodithioic acid, S-[2-[(1,4,5,6,7,7-hexachloro-5-norbornen-2-yl)methyl]thio]-1-methylethyl O,O-dimethyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
492	27207	Phosphorodithioic acid, S-hydroxymethyl O,O-dimethyl ester, acetate	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
493	25867	Phosphorodithioic acid, O-isopropyl O-methyl ester, S-ester with N-(mercaptomethyl)phthalimide	100 O. 100 Sc.	2.5 25	I I	----- -----	----- -----	I I	I I
494	24845	Phosphorodithioic acid, S-[(p-menth-1-ylthio)=methyl] O,O-dimethyl ester	100 O. 100 Sc.	N 100	50 I	----- -----	----- -----	100 100	I I
495	25821	Phosphorodithioic acid, O-methyl S,S-dipropyl ester	25 O. 25 Sc.	5 2.5	I I	----- -----	----- -----	I I	I I
496	25863	Phosphorodithioic acid, O-methyl O-propyl ester, S-ester with N-(mercaptomethyl)=phthalimide	100 O. 100 Sc.	25 50	I I	----- -----	----- -----	I I	I I
497	25974	Phosphoro(dithioperoxo)=thioic acid, SS-2,2-dichlorovinyl O,O-diethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
498	25975	Phosphoro(dithioperoxo)=thioic acid, SS-1,2-dichlorovinyl O,O-dimethyl ester	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
499	25976	Phosphoro(dithioperoxo)=thioic acid, <i>O</i> , <i>O</i> -dimethyl <i>SS</i> -1,2,2-trichloroethyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
500	27024	Phosphoro(monothio=peroxoic)acid, <i>O</i> , <i>O</i> -diethyl <i>SO</i> -[2-(ethylthio)ethyl] ester	50 O. 50 Sc.	50 50	----- -----	I I	I I	I I	I I
501	27030	Phosphoro(monothio=peroxoic)acid, <i>SO</i> -2,4-dinitrophenyl <i>O</i> , <i>O</i> -diethyl ester	25 O. 10 Sc.	25 10	----- -----	I I	I I	I I	I I
502	27031	Phosphoro(monothio=peroxoic)acid, <i>SO</i> -3,5-dinitro- <i>o</i> -tolyl <i>O</i> , <i>O</i> -diethyl ester	10 O. 10 Sc.	10 2.5	----- -----	I I	I I	I I	I I
503	27445	Phosphorothioic acid, <i>O</i> -1,2,3-benzothiadiazol-6-yl <i>O</i> , <i>O</i> -dimethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I 100 ^b	I 100 ^b	I I
504	27258	Phosphorothioic acid, <i>O</i> -(4-bromo-2,5-dichlorophenyl) <i>O</i> , <i>O</i> -diethyl ester	100 O. 100 Sc.	100 N	----- -----	100 I	25 I	50 I	I I
505	27162	Phosphorothioic acid, <i>O</i> -(4-bromo-2,5-dichlorophenyl) <i>O</i> , <i>O</i> -dimethyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	100 I	I I
506	27464	Phosphorothioic acid, <i>O</i> -7-chloro-4-benzofurazanyl <i>O</i> -isopropyl <i>O</i> -methyl ester	100 O. 100 Sc.	25 25	----- -----	I I	I I	I 100	I I
507	25933	Phosphorothioic acid, <i>O</i> -(2-chloro- <i>p</i> -menth-8-en-1-yl) <i>O</i> , <i>O</i> -diethyl ester	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I	I I
508	27117	Phosphorothioic acid, <i>O</i> -[2-chloro-1-(2,4,5-trichlorophenyl) vinyl] <i>O</i> , <i>O</i> -dimethyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
509	27409	Phosphorothioic acid, <i>O</i> -(2,5-dichloro-4-iodophenyl) <i>O</i> , <i>O</i> -diethyl ester	100 O. 100 Sc.	N 50	----- -----	50 I	50 I	50 I	I I
510	27408	Phosphorothioic acid, <i>O</i> -(2,5-dichloro-4-iodophenyl) <i>O</i> , <i>O</i> -dimethyl ester	100 O. 100 Sc.	N 100	----- -----	I 100	I 100 ^b	I I	I I
511	27569	Phosphorothioic acid, <i>O</i> -(2,5-dichloro-4-iodophenyl) <i>O</i> -ethyl <i>O</i> -methyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	100 I	I I
512	25553-X	Phosphorothioic acid, <i>S</i> -[[[2,5-dichlorophenyl]thio]methyl] <i>O</i> , <i>O</i> -diethyl ester (25-percent emulsion concentrate)	50 O. 50 Sc.	50 50	I I	----- -----	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
513	25589	Phosphorothioic acid, <i>S</i> -[(2,5-dichlorophenyl)thio]methyl <i>O,O</i> -dimethyl ester	100 O. 100 Sc.	N 50	I I	----- -----	----- -----	I I	I I
514	25972	Phosphorothioic acid, <i>S</i> -2,2-dichlorovinyl <i>O,O</i> -dimethyl ester	100 O. 100 Sc.	50 50	----- -----	I I	I I	I I	I I
515	25957	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O</i> -ester with <i>p</i> -chloro- <i>N</i> -(2-hydroxyethyl)- <i>N</i> -methylbenzenesulfonamide	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	I I
516	27449	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O</i> -ester with (<i>o</i> -chlorophenyl)=glyoxylonitrile oxime	100 O. 100 Sc.	N 100	----- -----	I 100 ^b	I I	I I	100 100
517	27485	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O</i> -ester with (2,6-dichlorophenyl)glyoxylonitrile oxime, α -isomer	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I	I I
518	27469	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O</i> -ester with (2,6-dichlorophenyl)glyoxylonitrile oxime, β -isomer	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
519	27144	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O</i> -ester with 3-hydroxycoumarin	50 O. 50 Sc.	25 50	----- -----	I 50	25 50	I 50	I 50
520	25958	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O</i> -ester with <i>N</i> -(2-hydroxyethyl)benzenesulfonamide	100 O. 100 Sc.	50 25	----- -----	I I	I I	I I	I I
521	25611	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O</i> -ester with 3-(hydroxymethyl)-1,2,3-benzotriazin-4(3 <i>H</i>)-one	50 O. 50 Sc.	25 25	I I	----- -----	----- -----	I I	I I
522	25706	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>S</i> -ester with <i>N</i> -(mercapto-methyl)phthalimide	100 O. 100 Sc.	10 .5 ^a	I I	----- -----	----- -----	I I	I 100
523	27448	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O</i> -ester with phenylglyoxylonitrile oxime	100 O. 100 Sc.	N N	----- -----	100 100	100 100	100 I	50 I
524	25741	Phosphorothioic acid, <i>O,O</i> -diethyl ester, <i>O,O</i> -triester with <i>S</i> -triazine-2,4,6-triol	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I I	I I
525	19507	Phosphorothioic acid, <i>O,O</i> -diethyl <i>O</i> -(2-isopropyl-6-methyl-4-pyrimidinyl) ester	100 O.	100	-----	I	I	I	I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
526	22820	Phosphorothioic acid, <i>O,O</i> -diethyl <i>O</i> -(6-methyl-2-propyl-4-pyrimidinyl) ester	100 O. 100 Sc.	100 100	I I	----- -----	----- -----	I I	I I
527	27377	Phosphorothioic acid, <i>O,O</i> -diethyl <i>O</i> -2-methyl-4-quinolyl ester	100 O. 100 Sc.	50 50	----- -----	I I	I I	I I	I I
528	25944	Phosphorothioic acid, <i>O,O</i> -diethyl <i>O</i> -4-methyl-2-quinolyl ester	100 O. 100 Sc.	N 50	----- -----	I I	I I	I I	I I
529	25636	Phosphorothioic acid, <i>O,O</i> -diethyl <i>O</i> -[4-(methylthio)- <i>m</i> -tolyl] ester	100 O. 100 Sc.	25 50	10 10	----- -----	----- -----	I 100	25 I
530	25673	Phosphorothioic acid, <i>O,O</i> -diethyl <i>O</i> -[4-(methylthio)-3,5-xylol] ester	100 O. 100 Sc.	N N	10 25	----- -----	----- -----	10 100	50 25
531	25597	Phosphorothioic acid, <i>O,O</i> -diethyl <i>O</i> - <i>m</i> -pentadecyl-phenyl ester	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
532	27311	Phosphorothioic acid, <i>O,O</i> -diethyl <i>O</i> -3,5,6-trichloro-2-pyridyl ester	100 O. 100 Sc.	N 100	----- -----	100 ^b I	100 100	100 I	I I
533	25848	Phosphorothioic acid, <i>O,O</i> -diethyl <i>S</i> -[(2,4-xylolthio)methyl] ester	100 O. 100 Sc.	50 N	I I	----- -----	----- -----	I I	I I
534	27330	Phosphorothioic acid, <i>O,O</i> -dimethyl ester, <i>O,O</i> -diester with 4,4'-dithiodiphenol	100 O. 100 Sc.	N N	----- -----	10 50	10 50	25 I	100 I
535	27165	Phosphorothioic acid, <i>O,O</i> -dimethyl ester, <i>O,O</i> -diester with 4,4'-thiodiphenol	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I	I I
536	27465	Phosphorothioic acid, <i>O,O</i> -dimethyl ester, <i>O</i> -ester with <i>N</i> -benzyl-4-hydroxyphthalimide	100 O. 100 Sc.	N 50	----- -----	I I	I I	100 I	I I
537	27235	Phosphorothioic acid, <i>O,O</i> -dimethyl ester, <i>O</i> -ester with 5-chlorosalicylonitrile	100 O. 100 Sc.	N 100	----- -----	100 100	I I	I 100	I I
538	27230	Phosphorothioic acid, <i>O,O</i> -dimethyl ester, <i>O</i> -ester with 4-hydroxy- <i>m</i> -anisonitrile	100 O. 100 Sc.	N 100	----- -----	100 ^b I	100 ^b I	100 I	I I
539	25675	Phosphorothioic acid, <i>O,O</i> -dimethyl ester, <i>O</i> -ester with <i>p</i> -hydroxybenzonitrile	100 O. 100 Sc.	N 100	25 25	----- -----	----- -----	I 100	I I
540	23967	Phosphorothioic acid, <i>O,O</i> -dimethyl ester, <i>O</i> -ester with 6-hydroxy-3(2 <i>H</i>)-pyridazinone	100 O.	N	-----	I	I	I	I
541	25707	Phosphorothioic acid, <i>O,O</i> -dimethyl ester, <i>S</i> -ester with <i>N</i> -(mercapto-methyl) phthalimide	100 O. 100 Sc.	100 100	100 25	----- -----	----- -----	I I	100 100

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued*

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—			Nymphal lone star ticks	
					Screw-worm	Secondary screw-worm	Black blow fly		Adult stable flies
542	25684	Phosphorothioic acid, <i>O,O</i> -dimethyl <i>O</i> -[4-(methylthio)-3,5-xylyl] ester	100 O. 100 Sc.	N 100	10 100	----- -----	----- -----	50 I	100 I
543	25923	Phosphorothioic acid, <i>O,O</i> -dimethyl <i>O</i> - <i>m</i> -nitro=phenyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
544	25715	Phosphorothioic acid, <i>O,O</i> -dimethyl <i>O</i> -4-nitro- <i>m</i> -tolyl ester	100 O. 100 Sc.	N 100	100 100	----- -----	----- -----	100 100	I I
545	25805	Phosphorothioic acid, <i>S</i> -4,6-dimethyl-2-pyrimidinyl <i>O,O</i> -diethyl ester	50 O. 50 Sc.	50 50	I I	----- -----	----- -----	I I	I I
546	23284	Phosphorothioic acid, <i>O,O</i> -dimethyl <i>O</i> -2,4,5-tri=chlorophenyl ester	100 O.	N	-----	I	I	I	I
547	24964	Phosphorothioic acid, <i>S</i> -[2-(ethylsulfinyl)ethyl] <i>O,O</i> -dimethyl ester	100 O. 100 Sc.	50 5	25 25	----- -----	----- -----	10 I	10 10
548	25674	Phosphorothioic acid, <i>S</i> -[2-(ethylsulfinyl)-1-methylethyl] <i>O,O</i> -dimethyl ester	100 O. 100 Sc.	N 100	50 100	----- -----	----- -----	100 50	50 50
549	25587	Phosphorothioic acid, <i>S</i> -[[<i>p</i> -fluorophenyl]thio]=methyl] <i>O,O</i> -dimethyl ester	25 O. 25 Sc.	25 25	I I	----- -----	----- -----	I I	I I
550	22821	Phosphorothioic acid, <i>O</i> -(2-isopropyl-6-methyl-4-pyrimidinyl) <i>O,O</i> -dimethyl ester	100 O.	N	-----	I	I	I	I
551	27326	Phosphorothioic acid, <i>O</i> -[3-(isopropylthio)-4-nitrophenyl] <i>O,O</i> -dimethyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I
552	25740	Phosphorothioic acid, <i>O</i> -methyl <i>O</i> - <i>p</i> -nitro=phenyl ester, <i>S</i> -anhydridosulfide with <i>O,O</i> -dimethyl phosphorothioate	100 O. 100 Sc.	100 25	I I	----- -----	----- -----	I I	I I
553	27184	Phosphorotrithioic acid, <i>O</i> -methyl <i>S,S</i> -dipropyl ester	25 O. 25 Sc.	25 25	----- -----	I I	I I	I I	I I
554	25455	Phosphorotrithioic acid, <i>O,S,S</i> -triethyl ester	100 O. 100 Sc.	N 100	I I	----- -----	----- -----	I 100	I I
555	26413	Phthalamic acid	100 O. 100 Sc.	N N	I I	----- -----	----- -----	I I	I I
556	25942	1-Phthalanecarbamic acid, 3-oxo- <i>m</i> -cumenyl ester	100 O. 100 Sc.	N 25	----- -----	I I	I I	I I	I I
557	25946	Phthalic acid, 1,2-dithio=bis(anhydrosulfide) with diethyldithio=carbamic acid	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I	I I
558	27243	Piperazine, citrate	100 O. 100 Sc.	N N	----- -----	I I	I I	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—					
				Lethal to guinea pig	Causing 100% kill of—				Nymphal lone star ticks
					Larvae of—			Adult stable flies	
					Screw-worm	Secondary screw-worm	Black blow fly		
559	26332	Piperazine, 1-phenyl-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
560	26783	Piperidine, 1-(3, 5-dimethylbenzoyl)-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
561	25921	Piperidine, 1-(2-ethylheptanoyl)-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
562	13109	Propane, 1, 2-epoxy-3-phenoxy-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
563	26697	1, 2-Propanediol, 3-(allyloxy)-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
564	26047	1, 3-Propanediol, 2-ethyl-2-methyl-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
565	27260	1-Propanethiol, 3-(tri- butylstannyl)-, acetate	100 O.	N	-----	I	I	I	I
			100 Sc.	50	-----	I	I	I	I
566	26304	1-Propanol, 2, 3-dibromo-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
567	24477	2-Propanone, 1, 3-dihydroxy-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
568	22917	2-Propanone, hexachloro-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
569	26003	Propionic acid, 3-(4-methoxy-1-naphthoyl)-	100 O.	N	I	-----	-----	I	I
			100 Sc.	100	I	-----	-----	I	I
570	22371	Propionic acid, 2-thio- cyanato-, ethyl ester	100 O.	100	I	-----	-----	I	I
			100 Sc.	100	I	-----	-----	I	I
571	8777	Propionitrile	100 O.	25	I	-----	-----	I	I
			100 Sc.	25	I	-----	-----	I	I
572	26303	Propionitrile, 3, 3'-(methylimino) di-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
573	25494	Propiophenone, 2, 3-epoxy-4'-methoxy-3-(<i>p</i> -methoxyphenyl)-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
574	23938	3, 5-Pyrazolidinedione, 4-butyl-1, 2-diphenyl-, sodium derivative	100 O.	N	I	-----	-----	I	I
			100 Sc.	50	I	-----	-----	I	I
575	25256	Pyridine, 4-nitro, 1-oxide	100 O.	100	I	-----	-----	I	I
			100 Sc.	50	I	-----	-----	I	I
576	27282	Pyrimidine, 4-methyl-2-[(3, 4, 4-trifluoro-3-butenyl) thio]-	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I
577	27281	Pyrimidine, 2-[(3, 4, 4-trifluoro-3-butenyl) thio]-	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I
578	25561	Pyrophosphoric acid, chloromethyl trimethyl ester	100 O.	N	100	-----	-----	I	I
			100 Sc.	50	100	-----	-----	I	I
579	26778	Pyrrolidine, 1- <i>m</i> -toluoyl-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
580	28016	2, 4(1 <i>H</i> , 3 <i>H</i>)-Quinazolin- edione	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I
581	25823	Salicylanilide, 2', 5-dichloro-4'-nitro-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
582	25516	Salicylanilide, 3, 4', 5-tribromo-	50 O.	25	I	-----	-----	I	I
			50 Sc.	25	I	-----	-----	I	I
583	26174-X	Sodium, [(4-chloro-2-biphenyl)oxy]-, mixture with [(6-chloro-2-biphenyl)oxy]sodium and (2-biphenyloxy)=sodium (10:3:5) in water	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I

See footnotes at end of table.

TABLE 1.—Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—				
				Lethal to guinea pig	Causing 100% kill of—			Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	
584	25621	Succinic acid, 2,2-dimer=capto-, diethyl ester, <i>S,S</i> -diester with <i>O,O</i> -dimethyl phosphorodi-thioate	100 O. 100 Sc.	N 50	I I	----- -----	I I	I I
585	25691	Succinic acid, (1-hydroxy=ethylidene)-, diethyl ester, diethyl phosphate	100 O. 100 Sc.	N 100	I 100	----- -----	I I	I I
586	26475	Succinic acid, (2-hydroxy-2-methylpropyl)-, γ -lactone, ethylene ester	100 O. 100 Sc.	100 100	I I	----- -----	I I	I I
587	26476	Succinic acid, (2-hydroxy-2-methylpropyl)-, γ -lactone, methyl ester	100 O. 100 Sc.	N N	I I	----- -----	I I	I I
588	26474	Succinic acid, (2-hydroxy-2-methylundecyl)-, γ -lactone, decyl ester	100 O. 100 Sc.	N N	I I	----- -----	I I	I I
589	25620	Succinic acid, mercapto-, 4-allyl-1-(2-mercapto=propyl) ester, <i>S,S</i> -diester with <i>O,O</i> -dimethyl phosphorodithioate	100 O. 100 Sc.	100 N	I I	----- -----	I I	I I
590	27188	Succinic acid, mercapto-, diethyl ester, propyl methylphosphonotri-thioate	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I
591	27470	Sulfamide, <i>N</i> -[(dichloro=fluoromethyl)thio]- <i>N',N'</i> -dimethyl- <i>N-p</i> -tolyl-	100 O. 100 Sc.	N 25	----- -----	I I	I I	I I
592	17254	Sulfanilamide, <i>N'</i> -2-quinoxaliny-	100 O. 100 Sc.	N N	----- -----	I I	I I	I I
593	25927	Sulfide, amidino dimethyl=thiocarbamoyl, hydrogen thiocyanate	100 O. 100 Sc.	100 N	----- -----	I I	I I	I I
594	27115	Sulfide, <i>p</i> -chlorophenyl 2,4,5-trichlorophenyl	100 O. 100 Sc.	N N	----- -----	I I	I I	I I
595	27226	Sulfurous acid, 2-(<i>p</i> -tert-butylphenoxy) cyclo=hexyl 2-propynyl ester	100 O. 100 Sc.	N 100	----- -----	I I	I I	I I
596	27224	Sulfurous acid, 1-[(<i>p</i> -tert-butylphenoxy)methyl]=propyl <i>o</i> -tolyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I
597	27225	Sulfurous acid, 1-[(<i>p</i> -tert-pentylphenoxy)=methyl]propyl 2-propynyl ester	100 O. 100 Sc.	N N	----- -----	I I	I I	I I
598	26257-X	<i>Swietenia mahagoni</i> wood, P ₂ fraction from petroleum ether extract	100 O. 100 Sc.	50 50	I I	----- -----	I I	I I
599	19510-X	Tergitol NPX, a nonylphenyl ether of polyethylene glycol	100 O. 100 Sc.	N N	I I	----- -----	I I	I I
600	26662	Tetradecanamide, <i>N,N</i> -dimethyl-	100 O. 100 Sc.	100 100	I I	----- -----	I I	I I
601	24858	Thiocyanic acid, (<i>p</i> -chloro=phenoxy) methyl ester	100 O. 100 Sc.	N N	I I	----- -----	I I	I I

See footnotes at end of table.

TABLE 1.—*Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs.* [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lowest dosage (mg./kg.)—				
				Lethal to guinea pig	Causing 100% kill of—			
					Larvae of—			Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly	Adult stable flies
602	25526	Thiocyanic acid, (1,4,5,6,7,7-hexachloro-2,5-norbornadien-2-yl) methyl ester	100 O. 100 Sc.	N 100	I I	----- -----		I I
603	25559	Thiocyanic acid, 2-hydroxypropyl ester, dimethylcarbamate	50 O. 50 Sc.	50 25	I I	----- -----		I I
604	23584-X	Thioperoxydiphosphoric acid, tetraethyl ester (75 percent) and tetra-isopropyl ester (25 percent)	100 O. 100 Sc.	N N	I I	----- -----		I I
605	25764	Thiophene, tetrachloro-	100 O. 100 Sc.	50 100	I I	----- -----		I I
606	26782	2-Thiophenecarboxamide, <i>N,N</i> -diethyl-4-methyl-	100 O. 100 Sc.	N 100	I I	----- -----		I I
607	33253	Thiophene-3-oI, tetrahydro-, carbanilate, 1,1-dioxide	100 O. 100 Sc.	N N	----- -----	I I	I I	I I
608	25208	Tin, acetoxytriphenyl-	100 O. 100 Sc.	50 100	----- -----	I I	I I	I I
609	25207	Tin, chlorotriphenyl-	100 O. 100 Sc.	100 50	----- -----	I I	I I	I I
610	26331	Tin, dibutylbis (lauroyloxy)-	100 O. 100 Sc.	N N	I I	----- -----		I I
611	28009	Tin, hydroxytriphenyl-	100 O. 100 Sc.	100 100	----- -----	I I	I I	I I
612	25517-X	Tin, tributyl-, derivative with tall oil	100 O. 100 Sc.	50 100	I I	----- -----		I I
613	27261	Tin, tributyl(oleoyloxy)-	100 O. 100 Sc.	50 25	----- -----	I I	I I	I I
614	26774	<i>m</i> -Toluamide	100 O. 100 Sc.	N N	I I	----- -----		I I
615	26777	<i>m</i> -Toluamide, <i>N</i> -tert-butyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
616	32949	<i>m</i> -Toluamide, <i>N</i> -butyl- <i>N</i> -ethyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
617	26773	<i>m</i> -Toluamide, <i>N,N</i> -dibenzyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
618	26781	<i>m</i> -Toluamide, <i>N,N</i> -diethyl- α -hydroxy-	100 O. 100 Sc.	N N	I I	----- -----		I I
619	26779	<i>m</i> -Toluamide, <i>N,N</i> -diethyl- α, α, α -trifluoro-	100 O. 100 Sc.	N 100	I I	----- -----		I I
620	26775	<i>m</i> -Toluamide, <i>N,N</i> -dipentyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
621	26804	<i>m</i> -Toluamide, <i>N,N</i> -di-2-pyridyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
622	32948	<i>m</i> -Toluamide, <i>N</i> -ethyl- <i>N</i> -isobutyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
623	32952	<i>m</i> -Toluamide, <i>N</i> -ethyl- <i>N</i> -propyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
624	20931	<i>m</i> -Toluamide, <i>N</i> -isobutyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
625	32953	<i>m</i> -Toluamide, <i>N</i> -isobutyl- <i>N</i> -propyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
626	32956	<i>m</i> -Toluamide, <i>N</i> -isopropyl-	100 O. 100 Sc.	N N	I I	----- -----		I I
627	32951	<i>m</i> -Toluamide, <i>N</i> -propyl-	100 O. 100 Sc.	N N	I I	----- -----		I I

See footnotes at end of table.

TABLE 1.—Systemic effectiveness of 640 compounds against screwworms, secondary screwworms, black blow flies, stable flies, and lone star ticks when administered orally (O.) and subcutaneously (Sc.) to guinea pigs. [N indicates no administered dosage was lethal to the guinea pig, and I indicates no dosage was systemically active against the arthropod.]—Continued

Item no.	ENT no.	Chemical	Highest dosage (mg./kg.) and method of administration	Lethal to guinea pig	Lowest dosage (mg./kg.)—				
					Causing 100% kill of—				
					Larvae of—			Adult stable flies	Nymphal lone star ticks
					Screw-worm	Secondary screw-worm	Black blow fly		
628	28468	<i>p</i> -Toluenesulfonamide, <i>N</i> - <i>tert</i> -butyl-	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I
629	26299	<i>m</i> -Toluic acid, hydrazide	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
630	24382	<i>m</i> -Toluic acid, methyl ester	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
631	32958	<i>m</i> -Toluic anhydride	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
632	25618	<i>p</i> -Toluidine, <i>N</i> -(<i>p</i> -chloro-phenyl)- α , α , α -trifluoro-2-nitro-	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
633	28546	Triethylamine, 2-[(3,7-dimethyl-2,6-octadienyl)thio]-, <i>trans</i> -	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I
634	28544	Triethylamine, 2-(2(10)-pinen-3-yloxy)-	100 O.	N	-----	I	I	I	I
			100 Sc.	100	-----	I	I	I	I
635	28545	Triethylamine, 2-(2-pinen-4-yloxy)-	100 O.	100	-----	I	I	I	I
			100 Sc.	100	-----	I	I	I	I
636	44584	Tung oil, processed	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I
637	24935	Urea, 1-acetyl-2-thio-	100 O.	100	-----	I	I	I	I
			100 Sc.	100	-----	I	I	I	I
638	26241-X	X-77 Spreader-activator, a mixture of alkylaryl poly (oxyethylene) glycols and free fatty acids in isopropyl alcohol	100 O.	N	I	-----	-----	I	I
			100 Sc.	N	I	-----	-----	I	I
639	27190	Xanthic acid, butyl-, benzyl ester	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I
640	28465-X	<i>m</i> -Xylyl sulfone, 55 percent, and related isomers	100 O.	N	-----	I	I	I	I
			100 Sc.	N	-----	I	I	I	I

^a Lowest dosage tested.

^b Inconsistently effective.

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5734	281	25208	(triphenyltin acetate)
6183	73	25256	(Phillips 1070)
6187	158	25353	
7037	229	25363	
8777	571	25389	
8981	276	25455	(Mobil VC 1-535)
9519	131	25494	(Eli Lilly 02026)
10519	215	25495	(Eli Lilly 04243)
13109	562	25498	(Eli Lilly 04470)
15918	193	25499	(Eli Lilly 04653)
16894	211	25513	(Shell SD-4554)
17254	592	25516	
17333	222	25517-X	(TIN-SAN)
18066-X	49	25525	(Velsicol 57-CS-41)
18304	50	25526	(Velsicol 57-CS-5)
18423	264	25545	(isobenzan)
19059	79	25553-X	(Geigy G-32500)
19473	204	25556	(Geigy G-33445)
19507	525	25559	(Geigy G-31987)
19510-X	599	25560	(Geigy G-31528)
20931	624	25561	(CPE (Graco))
22053	163	25567	(Bay-25820)
22371	570	25569	(Bay-28589)
22748	450	25571	(Shell SD-3958)
22751	429	25572	(Shell SD-3939)
22820	526	25577	(Shell SD-5533)
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23112	26	25588	(Geigy G-34542)
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24679	424	25620	(Velsicol 58-CS-39)
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24683	387	25622	(Velsicol 58-CS-51)
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27022	(Stauffer B-9340).....	27191	(Dowco-182).....
27023	(Stauffer B-9381).....	27192	(Dowco-183).....
27024	(Stauffer B-9564).....	27193	(Geigy GS-13005).....
27025	(Stauffer B-9712).....	27207	(Stauffer R-8033).....
27026	(Stauffer B-9713).....	27211	(Gen. Chem. GC-9879).....
27027	(Stauffer B-9714).....	27212	(Bay-41637).....
27028	(Stauffer B-10095).....	27213	(Bay-38799).....
27029	(Stauffer B-10175).....	27214	(Bay-38800).....
27030	(Stauffer B-10204).....	27224	(Naugatuck C-940).....
27031	(Stauffer B-10205).....	27225	(Naugatuck C-912).....
27032	(Stauffer B-10338).....	27226	(Naugatuck D-014).....
27033	(Stauffer B-10341).....	27227	(Stauffer B-11110).....
27034	(Stauffer B-10497).....	27230	(Stauffer B-11163).....
27035	(Stauffer B-10498).....	27235	(Bay-54203).....
27038	(Stauffer N-4168).....	27238	(Geigy GS-12968).....
27041	(Mobil MC-A-600).....	27239	(Stauffer B-10288).....
27043	(Shell SD-8988).....	27240	(Thompson-Hayward TH-184-F).....
27044	(Shell SD-9077).....	27243	(Antipar).....
27045	(Stauffer N-4446).....	27249	(Stauffer N-3794).....
27046	(Stauffer R-6395).....	27250	(Stauffer N-4328).....
27047	(Stauffer R-6482).....	27251	(Stauffer N-4330).....
27053	(Hercules 12402).....	27253	(Union Carbide UC-8454).....
27070	(Stauffer B-9323).....	27254	(Stauffer R-10043).....
27071	(Stauffer B-9625).....	27256-X	(Hoechst 2838).....
27072	(Stauffer B-9627).....	27257	(formothion).....
27085	(Gen. Chem. GC-6593).....	27258	(bromophos-ethyl).....
27096	(Shell SD-8786).....	27260	(Stauffer N-4372).....
27098	(Shell SD-8959).....	27261	(Stauffer N-5117).....
27099	(Shell SD-8967).....	27262	(Upjohn U-12379).....
27109	(Bay-50282).....	27263	(Upjohn U-20493).....
27110	(Chipman RP-11783).....	27264	(Upjohn U-24157).....
27112	(Chipman RP-13072).....	27268	(Hercules 13842).....
27113	(Chipman RP-13378).....	27269	(Hercules 13843).....
27114	(Stauffer N-4449).....	27274	(Chemagro 4537).....
27115	(tetrasul).....	27281	(Stauffer R-5467).....
27117	(Shell SD-9021).....	27282	(Stauffer R-5478).....
27119	(Shell SD-9102).....	27295	(Stauffer R-7239).....
27122	(Stauffer R-5762).....	27296	(Stauffer R-7240).....
27123	(Stauffer R-5763).....	27298	(Stauffer N-5196).....
27124	(Cooper 29-H-62).....	27300	(Union Carbide UC-9880).....
27125	(Cooper 57-H-62).....	27300-a	(Schering 34615).....
27126	(Cooper 156-H-61).....	27309	(Stauffer N-4988).....
27127	(Chevron RE-5353).....	27310	(Velsicol OCS-21959).....
27128	(Chevron RE-5655).....	27311	(Dursban®).....
27129	(Azodrin®).....	27312	(Gen. Chem. GC-10284).....
27135	(Monsanto CP-42320).....	27313	(Shell SD-10576).....
27136	(Monsanto CP-42366).....	27314	(Velsicol FCS-13).....
27137	(Monsanto CP-42527).....	27318	(Mobil VC 9-104).....
27138	(Monsanto CP-43556).....	27320	(Hercules 14503).....
27139	(Monsanto CP-43858).....	27321	(Hercules 14504).....
27140	(Monsanto CP-44016).....	27324	(Bay-62863).....
27144	(Niagara NIA-9227).....	27326	(Bay-69047).....
27153	(Gen. Chem. GC-9287).....	27330	(Bay-64995).....
27154	(Gen. Chem. GC-9160).....	27333	(Gen. Chem. GC-10101).....
27155	(Gen. Chem. GC-8266).....	27335	(CIBA C-8514).....
27156	(Hooker HRS-1630).....	27338	(Fisons NC-1493).....
27157	(Hooker HRS-1631).....	27339	(Neopynamin®).....
27158	(Hooker HRS-1634).....	27341	(duPont 1179).....
27159	(Hooker HRS-1635).....	27342	(duPont 1335).....

